AMERICAN CHEMICAL SERVICES NPL SITE
BASELINE RISK ASSESSMENT

GRIFFITH, INDIANA

Prepared For The
U.S. Environmental Protection Agency, Region VII
USEPA Work Assignment 029-ROBE-05J7
BVSPC Project No. 46517

Prepared By
Black & Veatch Special Projects Corp.

November 2000

FINAL
Human Health Risk Assessment

American Chemical Services
Griffith, Indiana

Prepared under
U.S. EPA Contract No. 68-W5-0004 (RAC VII Program)

Prepared by
Black & Veatch Special Projects Corp.
101 North Wacker Drive, Suite 1100
Chicago, Illinois 60606
Project No. 46517.0237

November 8, 2000

Executive Summary

In September of 1998, Black and Veatch Special Projects Corp. (BVSPC) was tasked by the United States Environmental Protection Agency (USEPA), Region V to revise a human health risk assessment performed by ENVIRON Corporation for the American Chemical Services (ACS) site according to USEPA comments dated August 19, 1998 (USEPA 1998e). In addition, BVSPC was tasked by USEPA to place all tables supporting the risk assessment into the Risk Assessment Guidance for Superfund (RAGS), Part D format (USEPA 1998a). In accordance with the aforementioned USEPA tasks, this risk assessment depends largely upon the original ENVIRON ACS Risk Assessment (RA) for much of its form, content, and methodology. Significant portions of the ENVIRON RA text, where in conformity with USEPA methodology, are reproduced and referenced here. Likewise, the figures contained in the ENVIRON report are reproduced, referenced, and contained within. However, all the tables following the text of this report are not ENVIRON's or modified ENVIRON tables. BVSPC regenerated all the tables de novo from the environmental sampling data.

The ACS site is located at 420 South Colfax Avenue, in the Town of Griffith, Indiana. ACS, which owns approximately 26 acres of the Site and leases another four acres from CSX, began solvent recovery operations at the Site in May 1955. The area around the site has historically been developed for industrial and commercial uses and is referred to as the "eastern portion of the Town" in the Master Plan for the Town of Griffith, Indiana (i.e., including all lands east of Broad Street between the Penn Central and C & E Railroads). The entire "eastern portion of the Town," including the Site, is currently zoned for industrial use. A map showing the location of the Site is provided in Figure 3-1. For the purposes of the baseline human health risk assessment, the evaluated on-Site and off-Site areas have been divided into the eight exposure areas shown in Figure 3-2 and described in greater detail in Section 3.2. These eight exposure areas are:

On-Site Areas

- Area 1: On-Site Containment and Still Bottoms/Treatment Lagoon Area
- Area 2: Off-Site Containment Area
- Area 3: Kapica-Pazmey Area
- Area 4A: Wetlands Area
- Area 4B: North Area

Off-Site Area

- Area 5A: Off-Site - East

- Area 5B: Off-Site - North
- Area 6: Off-Site - West

The exposure populations evaluated for risk of exposure to soil, sediment, surface water, and groundwater in these areas are as follows:

- On-site routine workers
- On-site utility workers
- On-site construction workers
- On-site trespassers
- Off-site residents (child and adult)
- Off-site construction workers
- Off-site commercial workers

USEPA Directive 9355.0-30 states that cumulative site cancer risks of less than 1 in 10,000 (1×10^{-4}) or hazard indices less than 1 indicate that remedial action is generally unnecessary unless on-site levels of a contaminant exceed chemical specific standards (e.g., MCLs, maximum contaminant level goals, etc.) or there are "imminent and substantial" adverse environmental impacts (USEPA 1991b). Almost all On-site and Off-site receptor populations evaluated in this risk assessment exceed a total cancer risk of 1×10^{-4} and/or a hazard index of 1. The only exceptions are the central tendency trespassers in Areas 4A and 4B and the central tendency adult residents in Area 6. The receptor populations with the highest cancer risk and/or hazard index in each of the eight exposure areas are described below.

The receptor population with the highest cancer risk in On-site Areas 1, 2, 3, and 4B is the utility worker. The cancer risks for utility workers ranged from 3×10^{-2} to 2×10^{-1}. The receptor population with the highest hazard indices in On-site Areas 1, 2, 3, and 4B is the construction worker. The hazard indices for construction workers ranged from 4,300 to 9,300. Onsite workers (includes routine and utility workers) exposed to site-wide groundwater have a cancer risk of 3×10^{-1} and a hazard index of 19. Trespassers are the maximum exposed receptor population in Area 4A with a cancer risk of 2×10^{-5} and a hazard index of 4. In Areas 5A and 6, the maximum exposed populations are residents (excess lifetime cancer risks ranging from 5×10^{-5} to 7×10^{-4}) and child residents (hazard indices ranging from 3 to 580). The maximum exposed populations in Area 5B are commercial workers (cancer risk of 5×10^{-3}) and construction workers (hazard index of 420).

The risks and hazard indices discussed in the preceding paragraph are generated by a limited list of organic and inorganic contaminants. This risk assessment determined that the following organic contaminants are present on-site and off-site at relatively high concentrations (i.e., concentrations which, collectively, or individually, generate cancer risks or hazard indices in one or more exposure populations greater than 1 x 10^{-4} or 1, respectively). The sample locations of the maximum detection (Figure 3-3 and 3-4) for each contaminant identified below follows in parentheses.

- **Area 1 Surface and Subsurface Soil**

  Aroclor - 1242 (TP02-03)
  Aroclor - 1254 (TP02-03)
  Benzene (TP02-03)
  Chloroform (TP06-04)
  Tetrachloroethene (TP02-03)
  Toluene (TP02-03)
  Trichloroethene (SB92-03)
  1,1,1-Trichloroethane (TP07-03)

- **Area 2 Surface and Subsurface Soil**

  Acetone (SA04-0)
  Aldrin (SB39-10)
  Aroclor 1254 (T12-S and SB37-10)
  Aroclor 1260 (SA02-S and SB78-07)
  Chloroform (SA04-0)
  Tetrachloroethane (SA04-0 and SA04-S)
  Toluene (SA04-0)
  1,1,1-Trichloroethane (SA04-0)

- **Area 3 Surface and Subsurface Soil**

  Acetone (SB30-10)
  Aroclor 1242 (TP01-03_5)
  Aroclor 1248 (SB48-01 and KP01-S)
  Aroclor 1254 (SB48-01 and SB30-10)
  Aroclor 1260 (SP02-S)
  Bis (2-ethylhexyl) phthalate (SB30-10)
  Benzene (SB30-10)
  Ethylbenzene (SB30-10)

Tetrachloroethene	(SA02-03 and SB30-10)
Toluene	(SB30-10)
Trichloroethene	(SA02-03 and SB30-10)
4-methyl-2-pentanone	(SB30-10)
1,1,1-Trichloroethane	(SB30-10)

- **Area 4B Sediment**

  Aroclor 1254 (ST11-101)

- **Area 5A Surface Soil**

  Aroclor 1254 (SS02-001)

- **Upper Aquifer (On-Site)**

  Aroclor 1248 (MW04)

  Benzene (MW03)

  Ethylbenzene (MW05)

  Toluene (MW03)

- **Upper Aquifer (Off-Site, Area 5A)**

  Benzene (MW06)

  Bis (2-ethylhexyl) phthalate (MW06)

  Di-n-octyl phthalate (MW06)

  Ethylbenzene (MW06)

  Pentachlorophenol (MW06)

  Xylene (MW06)

- **Upper Aquifer (Off-Site, Area 5B)**

  Benzene (MW48)

- **Lower Aquifer (On-Site)**

  Ammonia (MW09)

  Benzene (MW09)

  Bis (2-chloroethyl) ether (MW09)

  Bis (2-ethylhexyl) phthalate (MW23)

- **Lower Aquifer (Off-Site, Private Wells)**

  Chloroform (PWC-01)

- **Lower Aquifer (Off-Site, Monitoring Wells)**

  Bis (2-ethylhexyl) phthalate (MW36)

The off-site private wells in Area 5A are used to evaluate current risks to residents using the lower aquifer. The off-site monitoring wells in Area 5A are used to evaluate future risks to residents using the lower aquifer. The on-site lower aquifer wells were used to evaluate future exposure to downgradient commercial workers (e.g., car wash). The receptor populations with the highest carcinogenic risks and noncarcinogenic risks in each area are discussed in Section 5.0.

The following inorganics were discovered on-site and off-site at concentrations high enough to generate cancer risks in one or more receptors greater than 1×10^{-4} or hazard indices greater than 1:

- **Area 1 Surface and Subsurface Soil**
  - Antimony (TP06-04)
  - Beryllium (TP06-04)
  - Cadmium (TP06-04)
- **Area 2 Surface and Subsurface Soil**
  - Antimony (DS01-S)
  - Cadmium (DS01-S)
  - Chromium (DS01-S)
- **Area 3 Surface and Subsurface Soil**
  - Antimony (SA02-03 and SB30-10)
  - Barium (SB30-10)
  - Cadmium (SA02-03 and SB30-10)
  - Copper (SB30-10)
- **Area 5A Surface Soil**
  - Antimony (SS02-01)
- **Area 6 Sediment**
  - Arsenic (SD13-01)
  - Iron (SD14-01)
- **Upper Aquifer (On-Site)**
  - Arsenic (MW05)
  - Beryllium (MW48)
- **Upper Aquifer (Off-Site, Area 5A)**
  - Arsenic (MW06)
  - Antimony (MW06)
  - Iron (MW06)

Manganese	(MW06)

- **Upper Aquifer (Off-Site, Area 5B)**

Beryllium	(MW48)

- **Lower Aquifer (On-Site)**

Arsenic	(MW52)
Barium	(MW53)
Cadmium	(IW6)
Chromium	(MW10C)
Iron	(MW24)
Manganese	(MW24)

- **Lower Aquifer (Off-Site, Private Wells)**

Antimony	(PWX-01)
Arsenic	(PWS-01)
Iron	(PW02)
Manganese	(PWK-01)
Zinc	(PWO-01)

- **Lower Aquifer (Off-Site, Monitoring Wells)**

Arsenic	(MW28)
Barium	(MW22)
Beryllium	(MW28)
Chromium	(MW28)
Iron	(MW50)
Manganese	(MW36)
Nitrate	(MW07)
Thallium	(MW22)

All of the inorganics in the above well locations are less than their corresponding federal MCL except arsenic in MW-52 at a concentration of 130 μg/L (MCL = 50 μg/L) and cadmium in IW-6 at 36 μg/L (MCL = 5 μg/L).

In addition to the inorganics listed above, lead was also evaluated. The results of the evaluation are as follows:

- The current child exposure to lead in Area 5A private wells is slightly above USEPA acceptable levels due to a lead concentration of 22.6 μg/L in private well PWD-01.

- Future child exposures to lead in Area 5A monitoring wells are below USEPA acceptable levels.
- Current/future fetal blood lead levels of current/future routine workers in Areas 2 and 3 exceed USEPA acceptable limits due to their parents exposure to lead in soil (0-10 feet).
- Future fetal blood lead levels of construction workers in Areas 1, 2 and 3 exceed USEPA acceptable limits due to their parents exposure to lead in soil (0-4 feet and 0-10 feet).
- Future fetal blood lead levels of trespassers exceeded USEPA acceptable limits only in Area 3 due to their parents exposure to lead in soil (0-10 feet).

Areas 1, 2 and 3 contain buried waste and drums that have never been fully characterized. These drums represent a potential risk of acute exposure or explosion from general deterioration/mixing of contents and from vehicular puncture. In order to quantitatively estimate the risk associated with these exposures in these areas, further investigation would be required.

Table of Contents

Table of Contents (Continued)

Page No.

Table of Contents (Continued)

Tables

Table of Contents (Continued)

Figures

Appendices

1.0 Introduction

In September of 1998, Black and Veatch Special Projects Corp. (BVSPC) was tasked by the United States Environmental Protection Agency (USEPA), Region V to revise a Risk assessment performed by ENVIRON Corporation for the American Chemical Services (ACS) site according to USEPA comments dated August 19, 1998 (USEPA 1998e). In addition, BVSPC was tasked by USEPA to place all tables supporting the risk assessment into the Risk Assessment Guidance for Superfund (RAGS), Part D format (USEPA 1998a).

In accordance with the aforementioned USEPA tasks, this risk assessment depends largely upon the original ENVIRON ACS risk assessment (RA) for much of its form, content, and methodology. Large portions of the original RA text, that conformed to USEPA guidance, are reproduced and referenced here. Likewise, the figures contained in the ENVIRON report are reproduced, referenced, and contained within. All tables following the text of this report however, do not depend upon ENVIRON's RA for their genesis, but are generated by BVSPC de novo from the sampling data.

The risk assessment process used is the methodology authorized by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 (i.e. Superfund program) for characterizing the nature and extent of risks posed by uncontrolled hazardous waste sites and for evaluating potential remedial options. This report was prepared under contract number 68-W5-0004 (RAC VII program), USEPA work assignment number 029-ROBE-05J7.

The structure of this risk assessment report complies with the USEPA's Risk Assessment Guidance for Superfund Volume I (Parts A, B, and C) (1989a). It has also been formulated under the guidance of the Office of Solid Waste and Emergency Response (OSWER) Directive 9285.6-03 entitled "Human Health Evaluation manual, Supplemental Guidance: Standard Default Exposure Factors (USEPA, 1991a)," and USEPA's OSWER Directive 9285.7-081 entitled "Supplemental Guidance to RAGS: Calculating the Concentration Term" which promulgates the use of a 95 percent upper one-sided confidence limit (USEPA 1992d). The risk tables necessary to support this risk assessment have been generated and formatted according to USEPA's new Risk Assessment Guidance for Superfund: Volume I Human Health Evaluation Manual, Part D, "Standardized Planning, Reporting and Review of Superfund Risk Assessments" (USEPA 1998a).

The ACS NPL Site (the Site) is located at 420 South Colfax Avenue and includes the ACS property, the former Kapica-Pazmey property, and approximately four acres leased by ACS from CSX Corp. Historical activities at the Site have included solvent recovery, chemical manufacturing, incineration of industrial waste, and disposal of hazardous substances. The Site is currently zoned general industrial, and an active chemical manufacturing facility is currently located on a portion of the ACS property and leased CSX property (ENVIRON 1998).

The Site was placed on the NPL on September 21, 1984, and a Remedial Investigation (RI) and Feasibility Study (FS) were completed in June 1991 (Warzyn, Inc. 1991a) and June 1992 (Warzyn, Inc. 1992), respectively. USEPA's Record of Decision (ROD) for the Site was issued in September, 1992 (USEPA 1992a). A Baseline Human Health Risk Assessment (BRA) was prepared by Warzyn Inc. (1991b) as part of the RI/FS, and reportedly served as the basis for the development of remediation levels included by USEPA in the ROD. A unilateral Administrative Order for Remedial Design and Remedial Action (RD/RA) was signed by USEPA Region 5 in September 1994 (USEPA 1994a). Activities at the Site since the ROD was issued include installing a perimeter groundwater containment system (PGCS); installing a barrier wall and extraction system (BWES); collection of additional characterization data; conducting soil treatability studies; and placing an additional one-foot clay cap over the Off-Site Containment Area.

Although the BRA was conducted during the RI/FS, USEPA believes that it is reasonable to revise it due to several factors. In the six years since the RI/FS was completed, a substantial amount of new data have been collected at the site. USEPA has promulgated, in the RAGS Part D guidance, a revision of the required Superfund risk assessment format named the Technical Approach for Risk Assessment (TARA) Standard Tables (USEPA 1998a). In addition, in contrast to the conservative assumption made in the original BRA that residential development may occur on the site in the future, recent information suggests that it is reasonable to assume that future land use at the site will remain industrial (ENVIRON 1998). The purpose of this revised baseline risk assessment is to evaluate potential risk to human health based on consideration of all currently available site data, the latest USEPA risk assessment methodologies, input assumptions consistent with site conditions, and all other relevant regulatory guidance. This baseline risk assessment evaluates potential risk under current and reasonably anticipated future conditions at and surrounding the site in the absence of corrective measures and institutional controls. The procedures for evaluating the available site characterization data for useability in the risk assessment and for identifying contaminants for quantitative evaluation also follow USEPA guidance. The procedures and results of the data evaluation and contaminant identification are presented in Section 2.

Section 3 presents the detailed conceptual site model and the approaches used to assess exposures to the contaminants identified in Section 2. It presents: (1) a description of the current and reasonably anticipated future exposure setting on and surrounding the site; (2) potentially exposed populations consistent with current and reasonably anticipated future conditions; (3) potential pathways for on-site and off-site exposures; (4) estimates of contaminant concentrations in each environmental medium at potential points of exposure; and (5) estimates of contaminant intake for each potential exposure pathway. Section 4 presents the toxicity values that are used to evaluate potential cancer risks and chronic (i.e., long-term) noncancer hazards associated with the potential exposures estimated in Section 3. It presents the sources of the toxicity values for the contaminants identified in Section 2, as well as methods for evaluating contaminants lacking USEPA-derived toxicity values.

Section 5 combines the results of the exposure assessment and toxicity assessment to estimate potential cumulative cancer risk and noncancer hazards for each of the exposure pathways identified in Section 3.

Section 6 presents qualitative and quantitative analyses of uncertainties for key aspects of the baseline risk assessment.

Section 7 details the references cited in this report. All tables and figures are presented at the end of the text. Additional information supporting the revised baseline risk assessment is provided in Appendix A, which presents a detailed evaluation of future land use at the site. Toxicity profiles of each chemical of concern at the site are presented in Appendix B.

2.0 Evaluation of Site Characterization Data

The analytical data collected to characterize soil, groundwater, sediment, and surface water at and surrounding the site are evaluated in this section to identify the contaminants appropriate for quantitative human health risk assessment. The range of contaminant concentrations in various environmental media are also presented.

Site characterization data considered in the draft baseline risk assessment are discussed in the following reports prepared by Montgomery Watson (formerly Warzyn, Inc.):

- Remedial Investigation Report. June 1991 (Warzyn, Inc., 1991a);
- Supplemental Soil Sampling Investigation. August 1993 (Warzyn, Inc., 1993);
- Pre-Design Work Plan. August 1995 (Montgomery Watson 1995);
- Dewater/Barrier Wall Alignment Investigation Report. March 1996 (Montgomery Watson 1996a);
- Wetland Technical Memorandum (Phase I). July 1996 (Montgomery Watson 1996b);
- Upper Aquifer Investigation Technical Memorandum (Phase I). March 1996 (Montgomery Watson 1996c);
- 1996 Groundwater Sampling Results Report. January 1997 (Montgomery Watson 1997a);
- Wetland Technical Memorandum (Phase II). February 1997 (Montgomery Watson 1997b);
- Groundwater Monitoring Report. March 1997 (Montgomery Watson 1997c);
- Upper Aquifer Investigation Technical Memorandum (Phase II). July 1997 (Montgomery Watson 1997d);
- Lower Aquifer Investigation Technical Memorandum. July 1997 (Montgomery Watson 1997e);
- June 1997 Groundwater Sampling Results Report (Montgomery Watson 1997f);
- September 1997 Groundwater Sampling Results Report (Montgomery Watson 1998a); and
- December 1997 Groundwater Sampling Results Report (Montgomery Watson 1998b).

Data from these investigations were compiled and provided in electronic format by ENVIRON for use in the risk assessment. The following additional characterization data collected by BVSPC (on behalf of USEPA), have also been included in the risk assessment:

- Fire Pond Soil Analytical Results. January 1997 (BVSPC 1997a);

- Results of the December 1996 Outfall Surface Water Sample. February 1997 (BVSPC 1997b);
- Analytical Data Comparison of the March 1997 Groundwater Sampling Results. July 1997 (BVSPC 1997c);
- Results of the April 1997 Driveway Surface Water Sample. August 1997 (BVSPC 1997d); and
- Results of the April 1997 Groundwater Sample from ATMW-4D (BVSPC 1997d).

Supplemental soil and sediment sampling was conducted in July and September 1997. Data from these analyses have also been considered in the assessment, including:

- Soil and waste samples collected during the Materials Handling and Treatability Study (Focus Environmental 1997);
- Surface soil samples collected by Montgomery Watson at the ACS facility (Montgomery Watson 1997g);
- Sediment samples collected by USEPA west of the site (BVSPC 1997e); and
- Surface soil samples collected by USEPA east of the site (BVSPC 1997e).

In the supplemental sampling, sediments were analyzed for semivolatile organics and pesticides/PCBs, and all other samples were analyzed for volatile organics, semivolatile organics, pesticides/PCBs, and inorganics (including metals).

Tables 2-1 through 2-4 list the samples collected in soil, sediment, groundwater and surface water from the ACS Site and surrounding areas. Samples are identified by location, sample identification code (Sample ID), and date of collection, and are grouped by Site Area, as described in Section 3.2, and by depth, where applicable.

Section 2.1 describes the procedures used in evaluating the useability of the validated data and the basis for selecting contaminants of potential concern (COPC) for the quantitative risk assessment. Section 2.2 summarizes the COPC that are included in the exposure assessment presented in Section 3 and the toxicity assessment presented in Section 4.

2.1 Data Evaluation

The evaluation of the analytical data to identify contaminants appropriate for quantitative risk assessment follows USEPA's Guidance for Data Usability in Risk Assessment (USEPA 1992b) and Risk Assessment Guidance for Superfund (USEPA 1989). Considerations relevant to the evaluation of the data include the following:

- **Qualified Data**

  Data that were qualified as estimated during data validation (i.e., J-qualified data) are included for evaluation. Data that were qualified as rejected during data validation (i.e., R-qualified data) are eliminated. Measured concentrations that were qualified as not detected during data validation (i.e., U-qualified) due to contamination in associated quality control blanks (e..g, analytical method blanks) are considered not detected.
- **Field Duplicate Samples**

  The highest result of duplicate samples is chosen as the representative datum for the sample location. When only one datum in a duplicate pair had a detected concentration, the detected concentration is chosen as the representative datum for the sample location.
- **Contaminants Not Detected in Any Sample**

  The analytical data for each environmental medium are evaluated for contaminants that were not detected in any sample in the medium, during any sampling event. Contaminants not detected in any sample in a medium are excluded from the quantitative risk assessment of that medium.
- **Infrequently Detected Contaminants**

  The analytical data for each environmental medium are reviewed for contaminants that were detected infrequently in the medium. Contaminants detected in 5% or fewer of the groundwater samples from a given aquifer and exposure area (as defined in Section 3) are excluded from the quantitative risk assessment of groundwater for that aquifer and area. Contaminants detected in 5% or fewer of the soil, sediment, or surface water samples, respectively, from a given exposure area (as defined in Section 3) are excluded from the quantitative risk assessment of that medium for that area.
- **Major Earth Elements and Essential Nutrients**

  Naturally occurring elements that comprise the major elemental content of the earth's crust and that are essential nutrients or typical components in normal diet are excluded from the quantitative risk assessment only if they did not have toxicity data. These elements include:
  - Calcium
  - Magnesium
  - Potassium
  - Sodium

Each of these elements exists naturally in soil at concentrations of several percent without posing significant public health concerns. USEPA has not established toxicity values for these elements. Aluminum and iron, although naturally occurring elements, do have published toxicity values and therefore are quantitatively assessed for risk.

- **Tentatively Identified Compounds (TICs)**
  Both the identity and concentrations of TICs are highly uncertain (USEPA 1992c). Due to the relatively large number of TICs identified in site media (i.e., over 600), those TICs for which USEPA has developed toxicity criteria are included in the risk assessment, unless the tentative identity matches a compound for which samples were specifically analyzed (i.e., TCL/TAL contaminants). In those cases, the concentration identified by the specific analysis for that compound is evaluated instead. TICs for which no toxicity criteria are available are discussed in Section 6.2.

2.2 Summary of COPC

The contaminants in soil, sediment, groundwater, and surface water that are evaluated in the revised quantitative risk assessment are summarized in TARA Tables 2-5-1 through 2-5-9 for soil, 2-6-1 through 2-6-5 for sediment, 2-7-1 through 2-7-4 for surface water, and 2-8-1 through 2-8-7 for groundwater. These summary tables include the following information for each contaminant:

- Minimum detected concentration and qualifier;
- Maximum detected concentration and qualifier;
- Location of maximum concentration;
- Detection frequency;
- Contaminant-specific reference toxicity value;
- Potential contaminant-specific ARAR;
- Indication of whether analyte is a COPC; and
- Reason for contaminant selection or deletion.

The exposure point concentrations (95 UCL or maximum) selected for use in risk calculations are presented in Tables 2-9-1 through 2-9-9 for soil, 2-10-1 through 2-10-5 for sediment, 2-11-1 through 2-11-4 for surface water, and 2-12-1 through 2-12-7 for groundwater. The Site Areas are described in Section 3.2, and the summary statistics and basis for the exposure point concentration (EPC) selected are described in Section 3.3.

3.0 Exposure Assessment

The purpose of the exposure assessment is to evaluate the nature and magnitude of potential exposures to contaminants detected at the site during the RI and subsequent site characterization studies. The exposure assessment consists of the following components:

- Characterization of Exposure Setting (Section 3.1);
- Identification of Potential Exposure Routes and Pathways (Section 3.2);
- Exposure Concentrations (Section 3.3); and
- Estimation of Media Intake (Section 3.4).

The results of the exposure assessment are combined with the results of the toxicity assessment (Section 4) to characterize potential risk (Section 5).

3.1 Characterization of Exposure Setting

In the baseline risk assessment, the exposure setting is evaluated with respect to the general characteristics of the site and site surroundings, and potentially exposed populations, under both current and reasonably anticipated future land use conditions. Section 3.1.1 provides a general description of the current exposure setting at and around the site. Section 3.1.2 describes the exposure setting under a reasonably anticipated future land use scenario. Hypothetically exposed populations under current and future conditions are summarized in Section 3.1.3.

3.1.1 Current Exposure Setting

The site is located at 420 South Colfax Avenue, in an area of the Town of Griffith that historically has been developed primarily for industrial and commercial uses. The part of Griffith in which the site is located is referred to as the "eastern portion of the Town" in the Master Plan for the Town of Griffith, Indiana (i.e., including all lands east of Broad Street between the Penn Central and C & E Railroads). The entire "eastern portion of the Town," including the site, is zoned for industrial use (ENVIRON 1998). A map showing the location of the site is provided in Figure 1. For the purposes of the baseline risk assessment, on-site and off-site areas have been divided into eight Exposure Areas, shown in Figure 2 and described in greater detail in Section 3.2.

ACS, which owns approximately 26 acres of the site and leases another four acres from CSX, began operations at the site as a solvent recovery facility in May 1955. Through the nearly 42 years of continuous operation, ACS has modernized, modified, and expanded operations at the site. For example, in the 1960s ACS added facilities to manufacture small batches of specialty chemicals and in the 1970s built an epoxidation plant to produce a plasticizer. ACS currently employs over 40 full-time workers and intends to continue specialty chemical manufacturing and epoxidation operations at the site (ENVIRON 1998).

The ACS property is bisected by the Chesapeake & Ohio (C&O) Railroad (see Figure 2, Areas 1 and 2). The active facility is located in Area 1, north of the railroad, and contains two areas where waste drums were buried: the On-site Containment Area and the Still Bottoms/Treatment Lagoon Area. In the On-site Containment Area, an estimated 400 to 2,500 drums containing sludge and semi-solids of uncharacterized waste are located approximately one to five feet below ground surface (Warzyn, Inc. 1991a: Focus Environmental 1997; GeoPhysical 1998). The Still Bottoms Pond and Treatment Lagoon #1 were located in the mid-southern portion of Area 1 and were filled in with crushed drums partially full of sludge materials in the early 1970s (Warzyn, Inc. 1991a). Currently, the Still Bottoms/Treatment Lagoon Area is covered by crushed gravel, aboveground holding tanks, and a parking lot. The surface throughout Area 1, including the On-site Containment Area and Still Bottoms/Treatment Lagoon Area, is generally devoid of vegetation and covered by approximately six inches of aggregate and/or coarse sand and gravel. ACS has provided regular maintenance of this cover (ENVIRON 1998).

The undeveloped portion of the ACS property (Area 2 on Figure 2) is located south of the C&O Railroad. This area includes the "Off-site Containment Area," which was used for waste disposal between 1958 and 1975, when it was bermed and capped with clay (Warzyn, Inc. 1991a). A variety of wastes are reportedly present below the cover, including general refuse, still bottoms, ash from the on-site incinerator, and the remains of an estimated 25,000 to 55,000 drums (Focus Environmental 1997). According to ACS, Inc., most of the drums in Area 2 are not intact, having been punctured or crushed prior to disposal (Warzyn, Inc., 1992, Montgomery Watson 1995). Observations in test pits (Focus 1997) confirm this. Currently, Area 2 is generally covered by a one-foot deep clay cover and temporary spoils piles generated during remediation activities at the site. The spoils piles have PVC coverings. Recent observations in this area of the site have noted that the PVC coverings have deteriorated and that the clay cap has eroded away exposing drum-tops (BVSPC 1998a). In addition, many drums have been stored above ground and uncovered in this area.

In addition to the ACS property, the site includes two acres that also have a history of industrial use. These two acres are located south of the ACS property and adjacent to the Griffith Municipal Landfill (Area 3 on Figure 2). Kapica Drum, Inc., began drum reconditioning operations on this portion of the site in 1951. Pazmey Corporation bought the property in February 1980 and continued drum reconditioning operations until March 1987, when Darija Djurovic purchased the property for automobile storage and repair.

The site also includes four acres that ACS leases from CSX, located to the north of the active facility (Area 4B on Figure 2). Area 4B is currently undeveloped and heavily vegetated. It is bordered to the west and north by wetlands.

The land surrounding the site is currently zoned for industrial use, but historically has been used for a combination of industrial, residential, and recreational purposes. In the following paragraphs, current land uses in the vicinity of the site are described in a clockwise fashion, beginning at the northeast corner. The area surrounding the site and the roads and railroads immediately adjacent to the site are labeled in Figure 2.

Located northeast of the site, beyond the intersection of Colfax Avenue and the Grand Trunk Railroad right-of-way, are the Oak Ridge Prairie County Park and the Griffith Airport. Immediately east of the site and north of the C&O Railroad right-of-way, the land is undeveloped and zoned general industrial (ENVIRON 1998). To the east of Colfax Avenue and south of the C&O Railroad right-of-way are several small businesses. To the east of Colfax Avenue and along Reder Road, several small businesses and several single family residences are present (this area is labeled Area 5A on Figure 2). South of the intersection of Reder Road and Colfax Avenue, on Arbogast Avenue, are a private residence and a small industrial building. The area was zoned for industrial use after the residences were built, with the intention that any future development in the area would be industrial. The pre-existing residences in the industrial zone are considered conforming uses, and a zoning ordinance cannot force changes in these existing uses. However, new residences would be considered non-conforming and the ordinance can prevent construction of a non-conforming use. In addition, if the pre-existing residential use is discontinued, the ordinance can also prevent it from being resumed (Sargent 1997).

To the west and southwest of the site, south of the C&O Railroad right-of-way, are the Griffith Municipal Landfill and Town of Griffith Municipal Garage. Beyond the municipal landfill and west of the Chicago and Erie (C&E) Railroad right-of-way, are vacant land and a residential development (Area 6 on Figure 2). This area is zoned for residential use.

North of the C&O Railroad right-of-way to the west of the site (Area 4A on Figure 2), and north of the Grand Trunk Railroad right-of-way (Area 5B on Figure 2) the land is primarily vacant, and classified as wetlands. Further to the north, along Main Street, are small businesses and an industrial park.

3.1.2 Reasonably Anticipated Future Exposure Setting

Reasonably anticipated future exposure settings for evaluation in the baseline risk assessment have been developed based on USEPA's "Land Use in the CERCLA Remedy Selection Process" (USEPA 1995a). This guidance presents framework and specific factors to be used in determining the reasonably anticipated land use for the purpose of estimating potential future risks. Based on USEPA guidance (1995a), a comprehensive review of information pertinent to future land use patterns on and around the site has been conducted, as presented in Appendix A.

Site-specific information consulted in developing the reasonably anticipated future exposure setting at the ACS site includes the following:

- Master Plan for the Future Land Use, Griffith, Indiana;
- Official Zoning Map for Town of Griffith;
- Personal communications with the Building Commissioner of Griffith;
- Information from the Northwestern Indiana Regional Planning Commission (NIRPC)[1];
- U.S. Census data;
- U.S. topographic, wetland inventory, and flood plain maps;
- Declarations of Land Use Restriction of Real Property; and
- Information from the Historic Landmarks Foundation of Indiana.

The Master Plan for Griffith (Vilizan-Leman 1975) is used by the Town government to guide future development in Griffith.

A comprehensive review of information pertinent to future land use patterns surrounding the site confirms that the assumption of continued industrial land use at the site is appropriate (see Appendix A). Given the history of industrial land use at the site, ACS's plans for continuing operations, the Town of Griffith's plans for continuing industrial/commercial development surrounding the site, and the aesthetic unsuitability of the site's location for residential development, the probability is low that the location of the site would support residential use in the future (ENVIRON 1998). The limited population growth expected in the future and Griffith's plans to direct the potential growth away from the site also indicate a low probability of future residential land use at the site.

---

[1]NIRPC is a multi-purpose, area-wide planning agency representing local governments within Lake, Porter, and LaPorte Counties; at least two-thirds of the Commission must be local officials.

Thus, the future exposure setting for all on-site areas is assumed to be industrial/commercial. The future exposure setting for all off-site areas is assumed to also include residential use, given the current existence of homes in the industrially zoned areas adjacent to the site.

3.1.3 Summary of Potentially Exposed Populations

Based on the exposure settings described in Sections 3.1.1 and 3.1.2, the baseline risk assessment evaluates the following land uses, under both current and reasonably anticipated scenarios:

- Industrial land use at the site; and
- Industrial/commercial, residential, and recreational land uses surrounding the site.

The exposure populations considered in the risk assessment under these land use scenarios are:

- **On-site Workers - Routine Operations**

  The majority of workers at the ACS facility are employed in manufacturing functions which take place within manufacturing buildings. These workers rarely, if ever, perform job functions that bring them into direct contact with soil or groundwater at the site. Routine incidental contact with outdoor areas at the facility may occur during breaks and walks to and from parking lots. The extent of such outdoor activities is expected to vary seasonally, and to differ from area to area at the site (ENVIRON 1998).
- **On-site Workers - Utility Excavation**

  A small number of the facility's workers may be involved in occasional outdoor maintenance activities (e.g., replacing the aggregate covering the site), or occasional excavation activities (e.g., to maintain underground utility lines at the site) in addition to routine manufacturing work. The extent of contact during excavation activities is expected to vary seasonally, and to differ from area to area at the site (ENVIRON 1998).
- **On-site Workers - Construction**

  Several areas of the site are not developed and may require construction of buildings prior to industrial use. Such construction could involve more extensive excavation than for utility line maintenance. Contact during construction activities would be limited to the building season (i.e., nine months of the year).

- **On-site Trespassers**
  Public access to portions of the site is controlled by perimeter fencing that is inspected monthly. In addition, the presence of the active ACS facility discourages unauthorized entry to the site. Several outdoor recreational areas are located nearby, further reducing the potential for trespassing at the site. Trespassing has been observed in the unfenced portions of the site, but not in the fenced portions (ENVIRON 1998). Nevertheless, this population is assessed for risk under current and future land-use.
- **Off-site Residents**
  The nearest residences to the site are located east of the site along Reder Road and Colfax Avenue (Area 5A, Figure 2). Additional residences are located beyond the Griffith Municipal Landfill and C&E railroad right-of-way, west and southwest of the site (Area 6, Figure 2).
- **Off-site Workers**
  Various commercial and industrial properties are located to the north, east, and south of the site.

3.2 Identification of Potential Human Exposure Routes and Pathways

The potential routes of human exposure evaluated in the baseline risk assessment are ingestion, dermal contact, and inhalation. In some cases, chemicals may migrate through an "exposure pathway" from a source to a location where exposure through one or more of these routes could potentially occur.

For an exposure pathway to be complete, the following elements are required: (1) a source and a mechanism of contaminant release; (2) a transport medium; (3) a point of potential human contact with the affected medium (i.e., an exposure area); and (4) an exposure route at the point of contact. Based on a consideration of exposure routes and complete exposure pathways, the following eight exposure areas have been evaluated in this risk assessment:

On-site Areas

- Area 1: On-site Containment and Still Bottoms/Treatment Lagoon Area
- Area 2: Off-site Containment Area
- Area 3: Kapica-Pazmey Area
- Area 4A: Wetlands Area

- Area 4B: North Area

Off-site Area

- Area 5A: Off-site - East
- Area 5B: Off-site - North
- Area 6: Off-site - West

These areas represent potential points of contact with affected media, based on the current and reasonably expected future exposure settings at and around the ACS site. Each exposure area is shown in Figure 2.

Sections 3.2.1 through 3.2.8 below describe the exposure areas included in the baseline risk assessment, and the potential exposure routes and pathways that are quantitatively evaluated for each area. The potential exposure pathways for each Area are summarized in Tables 3-1 through 3-8.

3.2.1 Area 1: On-site Containment and Still Bottoms/Treatment Lagoon Area

Area 1 is the active manufacturing area of the ACS property and consists of approximately 15 acres located north of the C&O Railroad. It is surrounded by a fence and includes the On-site Containment Area and the Still Bottoms/Treatment Lagoon Area. Current and potential future receptors evaluated in the risk assessment for Area 1 are: (1) routine workers; and (2) utility workers. Trespassing has not been observed in Area 1 under current conditions, but trespassers are assumed to be an additional potential future receptor in this area. Due to physical restraints posed by the shallow groundwater table in this area, future construction would probably be of the slab-on-grade variety involving shallow excavation; therefore, a typical construction worker scenario is not evaluated for Area 1. However, exposure to shallow groundwater by future construction workers during shallow excavations, 0 to 4 feet below ground surface (bgs), is evaluated for dermal and inhalation risk.

Following closure of the disposal areas at the ACS facility (i.e., the On-site Containment Area and the Still Bottoms/Treatment Lagoon Area) in the 1970s, wastes were covered with at least one foot of clean fill material. In addition, ACS currently maintains a six-inch aggregate cover over most of the manufacturing area. This cover is added to and regraded periodically, as needed (ENVIRON 1998). However, in order to quantitatively establish the need to maintain this cover, current and future on-facility workers are assessed for contact with surface soils during routine activities in Area 1. Because the future composition of surface soil cannot be predicted with certainty and may be some combination of what is currently considered surface and subsurface, future risks to on-facility workers and trespassers were estimated by including all sample results from 0 to 10 feet bgs and then calculating a reasonable maximum exposure concentration for the entire depth-range.

It has been assumed that both current and future exposure of on-site and off-site receptors could potentially occur via inhalation of vapors emitted from undisturbed soil above the groundwater table in Area 1. However, only on-site inhalation risks are quantitatively evaluated. Vapor emissions from groundwater would be significantly less than emissions from soil above the groundwater table. Potential off-site inhalation exposures are evaluated for off-site residents nearest to Area 1, and thus are considered conservative, screening-level estimates.

Exposures could also potentially occur in limited portions of Area 1 if excavation through the aggregate and clean fill is necessary to maintain underground utilities. To conservatively estimate these potential exposures, it is assumed that excavations could occur anywhere in Area 1. Due to the shallow depth to groundwater in Area 1 (approximately two to eight feet below ground surface) (Warzyn, Inc. 1991a), exposure to both subsurface soil and groundwater in an excavation pit may occur during maintenance of utility lines, which are typically located three to seven feet below ground surface. Under current conditions, contact with these media is not anticipated because all workers performing excavations at the ACS site are required to wear personal protective equipment as specified in the *ACS Site Safety and Health Plan* (ACS 1997).

However, in order to establish the need for these protective measures, the baseline risk assessment evaluates both current and future exposures by underground-utility workers, assuming that protective equipment may not be worn during excavation activities. In such cases, the primary potential routes of exposure for excavation workers would be incidental ingestion of soil, dermal contact with soil, dermal contact with shallow groundwater entering into an excavation pit, and inhalation of vapor and particulates from soil and exposed groundwater. Incidental ingestion of groundwater is judged to be relatively insignificant and is not evaluated.

Since Area 1 is currently used by ACS for manufacturing operations, USEPA has requested an evaluation of the potential adverse consequences of truck traffic over the drum landfill. Very limited data are available regarding specific contaminant concentrations in the drummed materials, preventing a quantitative analysis of risks posed by trucks driving over the drum landfill. However, to address USEPA's concerns, a qualitative discussion of the potential risks of truck traffic over the drums in Area 1 is presented in Section 5.3.

Off-site residents could also conceivably be exposed to emissions from soil during periods of excavation in Area 1, under both current and future conditions. However, due to the short duration and frequency of excavations, these risks were assumed to be insignificant; therefore, this pathway will not be discussed further in this risk assessment.

In the past, ACS has used lower aquifer production wells for process water in a closed system. Currently, all production wells are sealed and the ACS facility relies on municipal water only. In addition, ACS has placed a deed restriction on the property to restrict use of groundwater for drinking water and irrigation. Thus, exposure to groundwater in Area 1 is not likely to occur (ENVIRON 1998). However, in order to establish the quantitative need for deed restrictions and in the event that production wells are reinstalled in the future to supplement the municipal water, it is assumed that current and future workers could conceivably be exposed to lower aquifer groundwater via ingestion and showering.

3.2.2 Area 2: Off-site Containment Area

Area 2 is the Off-site Containment Area. It consists of approximately 11 acres and is bounded to the north by the C&O Railroad, to the west by the Griffith Municipal Landfill, to the south by the former Kapica-Pazmey property, and to the east by Colfax Road. Area 2 is a fenced but undeveloped property owned by ACS. No trespassing has been observed in Area 2 and the fence is checked monthly (ENVIRON 1998). However, in order to establish the quantitative need for these control measures (i.e., fence maintenance), current exposures to trespassers are evaluated for risk. Although ACS has no plans to sell this property, or to develop it for any purpose, it is conceivable that Area 2 could be developed for industrial use in the future. Should this area be developed for industrial purposes, potentially exposed future individuals in Area 2 could potentially include routine workers, utility workers, construction workers, and trespassers.

The portion of Area 2 where waste disposal reportedly occurred was covered by more than one foot of clay after the disposal activities ceased. If intact, such a clay cap would eliminate direct contact with subsurface materials and reduce the magnitude of vapor emissions. Although the initial clay cap was disturbed in several locations during site characterization and remediation activities, a new clay cap (one-foot deep) has been placed over Area 2 (ENVIRON 1998). However, recent field observations noted numerous locations where this new cap had eroded, exposing drums at the surface (BVSPC 1998a).

Under current conditions, it is assumed that trespassers could be exposed to soil below the cap through incidental ingestion, dermal contact, and inhalation, and that exposures of off-site residents could occur via inhalation of vapors from undisturbed subsurface soil in Area 2. Potential exposures of off-site residents are evaluated by estimating vapor concentrations in air at the off-site residences nearest to Area 2, and thus are considered conservative, screening-level estimates.

If Area 2 were to be developed for industrial purposes, exposures of future routine workers could potentially occur via direct contact with surface soils and inhalation of vapor emissions from surface and subsurface soil. The future composition of surface soil cannot be predicted with certainty, and may be some combination of what is currently considered surface and subsurface. Due to ongoing remediation investigations and activities, no samples have been collected from 0 to 2 feet; thus, the current surface concentrations have not been characterized. Therefore, the risk assessment includes an estimate of potential future risks to on-facility workers based on subsurface soil concentrations only. The data set used to evaluate this scenario was collected from 2 to 10 feet.

In addition, current and future excavation activities to maintain underground utilities could also result in exposures to subsurface soil in Area 2 if personal protective equipment were not worn. To quantify potential exposures during underground-utility maintenance, it is assumed that excavations could occur to a depth of 10 feet anywhere in Area 2. The primary potential routes of exposures for utility workers in Area 2 are ingestion of soil, dermal contact with soil, and inhalation of vapor and particulates from exposed soil. Since the water table is somewhat deeper in Area 2 than in Area 1 (generally 10 to 16 feet below ground surface, except at locations immediately adjacent to Area 1), contact with groundwater in an excavation pit is not likely to occur and is not evaluated.

If Area 2 were to be developed for industrial purposes, building construction involving extraction of soils may also occur. Exposures of future construction workers could potentially occur via incidental ingestion of and dermal contact with soil and inhalation of vapor and particulate emissions from soil. Two construction scenarios are evaluated: (1) the construction of a slab-on-grade building, such as a warehouse, assuming footings excavated to a depth to four feet; and (2) construction of a building requiring excavations to a depth of up to 10 feet.

Off-site residents could also be exposed via inhalation of vapor and particulate emissions from soil during periods of excavation for utility maintenance or construction in Area 2, under future conditions. However, due to the short duration and frequency of excavations, these risks were assumed to be insignificant; therefore, this pathway will not be discussed further.

As mentioned previously, municipal water is readily available to the site. Thus, future industrial development of Area 2 is likely to include connection to the municipal supply rather than construction of wells, and exposure to on-site groundwater is unlikely to occur

(ENVIRON 1998). However, in the event that on-site production wells are established in the future to supplement the municipal water (e.g., for ingestion or showering), it is assumed that workers could conceivably be exposed to lower aquifer groundwater in the future.

3.2.3 Area 3: Kapica-Pazmey Area

The 2-acre Kapica-Pazmey Area is located to the south of the Off-site Containment Area (i.e., Area 2) and is bounded to the west and south by the Griffith Municipal Landfill. As with Area 2, this area is currently fenced and undeveloped, but could conceivably be developed for industrial purposes in the future. Thus, current receptors for Area 3 are trespassers, utility workers, and receptors in other areas who may inhale emissions from Area 3.

Potential exposures of off-site residents may occur via inhalation of vapor and particulate emissions from soil in this area. However, due to the short duration and frequency of excavations, these risks were assumed to be insignificant.

If Area 3 is developed for industrial purposes, exposures of future routine workers could occur via ingestion and dermal contact with surface soil, and inhalation of vapor and particulate emissions from soil. Because the future composition of surface soil cannot be predicted with certainty, and may be some combination of what is currently considered surface and subsurface, current and future risks to on-facility workers and future risks to trespassers were estimated by including all sample results from 0 to 10 feet bgs and then calculating a reasonable maximum exposure concentration for the entire depth-range.

In addition, current and future excavation activities to maintain underground utilities could result in exposures to subsurface soil in Area 3 if protective equipment were not worn. To quantify potential exposures during underground-utility maintenance, it is assumed that excavations could occur to a depth of 10 feet anywhere in Area 3. The primary potential routes of exposure for excavation workers are ingestion of soil, dermal contact with soil, and inhalation of vapor and particulates from exposed soil. Due to the depth of the water table in Area 3 (approximately 10 to 16 feet below ground surface), contact with groundwater in an excavation pit is not expected to occur and thus is not evaluated.

If Area 3 were to be developed for industrial purposes, building construction involving excavation of soils may also occur. Exposures of future construction workers could potentially occur via incidental ingestion of and dermal contact with soil and inhalation of vapor and particulate emissions from soil. Two construction scenarios are evaluated: (1) the construction of a slab-on-grade building, such as a warehouse, assuming footings excavated to a depth of four feet; and (2) construction of a building requiring excavations to a depth of up to 10 feet.

Off-site residents may also be exposed to vapor and particulate emissions from soil during periods of excavation for utility maintenance or construction in Area 3, under future conditions. However, due to the short duration and frequency of excavations, these risks were assumed to be insignificant; therefore, this pathway will not be discussed further.

As mentioned previously, municipal water is readily available to the site. Thus, future industrial development of Area 3 is likely to include connection to the municipal supply rather than construction of wells, and exposure to on-site groundwater is unlikely to occur (ENVIRON 1998). However, in the event that on-site production wells are established in the future to supplement the municipal water (e.g., for ingestion or showering), it is assumed that workers could conceivably be exposed to lower aquifer groundwater in the future.

3.2.4 Area 4A: Wetlands Area

Area 4A is located between the Grand Trunk Railroad and the C&O Railroad right-of-ways, west of the fence line of Area 1. This approximately 25-acre area is primarily wetlands and is unlikely to be developed in any way due to Federal Clean Water Act prohibitions on wetland development (42 U.S.C. 1311 and 1344).

Under current and future conditions, potential exposure of trespassers may occur via incidental ingestion and dermal contact with sediment and surface water, and via inhalation of vapor emitted from surface water in Area 4A.

3.2.5 Area 4B: North Area

Area 4B consists of six acres located north of Area 1 and south of the Grand Trunk Railroad right-of-way and is heavily vegetated and undeveloped. This area is evaluated separately from Area 4A because it is not classified as wetlands, and thus could potentially be developed for industrial purposes in the future. Under current land use, trespassers are the only potential receptors in Area 4B. Should this area be developed for industrial purposes, future receptors could include routine workers, excavation workers for utility maintenance, and trespassers. Due to physical restraints posed by the shallow groundwater table in this area, future construction would probably be of the slab-on-grade variety involving shallow excavation; therefore, a typical construction worker scenario is not evaluated for Area 4B. However, exposure to shallow groundwater by future construction workers during shallow excavations (0 to 4 feet bgs) is evaluated for dermal and inhalation risk.

Under current and future conditions, potential exposure of trespassers may occur via ingestion and dermal contact with sediment and surface water, and via inhalation of vapor emitted from groundwater in Area 4B.

Should this area be developed for industrial purposes in the future, potential exposure of workers may occur via ingestion and dermal contact with sediment and surface water, and via inhalation of vapor emitted from groundwater in Area 4B. No contaminants have been detected in subsurface soil from this area, so the evaluation of potential future exposures is conservatively based on surface soil concentrations only.

The baseline risk assessment evaluates potential future exposures by utility workers, assuming that protective equipment may not be worn during excavation activities. In such cases, the primary potential routes of exposure for excavation workers would be incidental ingestion of sediment, dermal contact with sediment, dermal contact with groundwater entering into an excavation pit, and inhalation of vapor and particulates from exposed groundwater. Ingestion of groundwater is judged to be relatively insignificant and is not evaluated.

As mentioned previously, municipal water is readily available to the site. Thus, future industrial development of Area 4B is likely to include connection to the municipal supply rather than construction of wells, and exposure to on-site groundwater is unlikely to occur (ENVIRON 1998). However, in the event that on-site production wells are established in the future to supplement the municipal water (e.g., for ingestion or showering), it is assumed that workers could conceivably be exposed to lower aquifer groundwater in the future.

3.2.6 Area 5A: Off-site East

Area 5A consists of off-site properties to the east and southeast of the site that are zoned for industrial use only, but include existing residential development. Current and future potential receptors in Area 5A include both off-site residents and off-site workers. As off-site worker exposures are expected to be lower than potential residential exposures in Area 5A, only residential exposures are quantified in the risk assessment. Risks are calculated for both child and adult residents.

As discussed in Sections 3.2.1 through 3.2.5, residents could be exposed via inhalation of soil vapor and particulates from on-site areas, both during routine operations and during excavation in those areas. However, due to the short duration and frequency, risks resulting from excavations were not evaluated. Site-related contaminants may also migrate to off-site soils via deposition of airborne particulates or via groundwater discharge to the surface. Residences near the site are not located at groundwater discharge points and deposition of particulate emissions from the site is not expected to be significant. However, as a conservative measure, the baseline risk assessment evaluates potential residential exposure to off-site soil based on the results of supplemental off-site samples collected by USEPA in September 1997.

Most residents of Griffith rely on the municipal water supply system for drinking water (Warzyn, Inc. 1991b). Conditions at the site do not and cannot affect the quality of the municipal water supply, as this water is drawn from Lake Michigan (NIPSC 1992). However, residents in Area 5A do use well water and therefore, exposures to contaminants in groundwater in Area 5A can occur during potable use through ingestion, dermal contact, and inhalation. Potential exposures of off-site adult residents to contaminants in groundwater during outdoor use are via incidental ingestion and dermal contact during gardening, lawn care, and other nonpotable uses. Off-site child residents could be exposed to contaminants in groundwater used to fill an outdoor swimming/wading pool.

Two groundwater aquifers are present in the vicinity of the site, with a continuous clay layer separating the two systems (Warzyn, Inc. 1991a). In the site monitoring wells, the average depth to the top of the clay confining layer is about 15 to 20 feet bgs. A thorough survey of private wells in the area performed by Warzyn (now Montgomery Watson) during the Remedial Investigation (Warzyn, Inc. 1991a) indicated that all private wells in the vicinity of the site (on Reder Rd., Colfax Ave., and Arbogast St.) are screened in the lower aquifer, at depths ranging from 45 to 65 feet bgs. The majority of the logs provide descriptions of the formations at the well location, and document the presence of the clay layer and that the well is screened below the clay layer. Well records were not available for two wells in Area 5A, along Reder Road. However, contaminant concentrations collected from these two private wells (and all of the other private wells) are significantly lower than concentrations measured in the upper aquifer in that area, and are similar to those measured in the lower aquifer Thus, there is no evidence that any private wells are currently screened above the clay layer in Areas 5A or 5B, or are being influenced by groundwater quality in the upper aquifer (ENVIRON 1998).

Therefore, the risk assessment uses concentrations in the lower aquifer to estimate current and future potable residential uses in Area 5A. However, as a bounding scenario, the risk assessment also evaluates potential risks from residential non-potable use (i.e., lawncare, wading pool, etc.) of upper aquifer water.

3.2.7 Area 5B: Off-site North

Area 5B consists of off-site properties to the north of the site that are zoned for industrial use. The area immediately north of the site in Area 5B is primarily vacant, and classified as wetlands. There are no residences in Area 5B within approximately half a mile of the site, and the wetlands portion of Area 5B is unlikely to be developed in any way due to Federal Clean Water Act prohibitions on wetland development (42 U.S.C. 1311 and 1344). Future potential receptors in the non-wetlands portions of Area 5B are off-site commercial workers. Contaminants have been detected in upper aquifer water in a vacant portion of this area, so exposures are evaluated for those future construction workers who may potentially contact upper aquifer water. The clay layer averages 13 feet in depth below ground surface in Area 5B, which precludes installation of a well in the upper aquifer. Thus, workers performing excavation for construction are the only receptors likely to contact upper aquifer water.

To conservatively estimate future exposures to the upper aquifer in Area 5B, it is assumed that excavations could occur anywhere in Area 5B. Due to the shallow depth to groundwater in Area 5B, exposure to groundwater in an excavation pit may occur.

The baseline risk assessment evaluates potential future exposures by construction workers, assuming that protective equipment may not be worn during excavation activities. In such cases, the primary potential routes of exposure for excavation workers would be dermal contact with groundwater entering into an excavation pit and inhalation of vapor from exposed groundwater.

Northern migration of on-site contaminants in the lower aquifer could potentially occur and contaminate the lower aquifer below Area 5B in the future. This future lower aquifer could then be put to various commercial uses. In order to account for this potential migration and exposure, current on-site concentrations in the lower aquifer were used to assess future inhalation and dermal exposures to commercial workers (e.g., car wash) in Area 5B.

3.2.8 Area 6: Off-site - West

Area 6 consists of off-site properties to the west and southwest of the site in an area that is zoned for residential use. Current and future potential receptors in Area 6 include off-site residents and off-site workers. As off-site worker exposures are expected to be lower than potential residential exposures in Area 6, only residential exposures are quantified in the risk assessment. Risks are calculated for both child and adult residents. Surface water from Area 4A (i.e., the wetlands area) discharges contaminated sediment to a low-lying area between the Chesapeake and Ohio railroad right-of-way and the Griffith Municipal landfill. Water intermittently present in this area flows to the west, towards Area 6. Therefore, potential residential exposures to sediment are evaluated for Area 6. Exposures to groundwater are not evaluated, however, because Area 6 is not located downgradient of the site.

3.3 Exposure Concentrations

Contaminant concentrations have been measured in soil, groundwater, surface water, and sediment at various locations at and around the ACS site. The sampling locations for all environmental samples used in this assessment are presented in Figure 3 (soil and sediment) and Figure 4 (surface water and groundwater). The measured contaminant concentrations in each media are used in estimating potential exposure concentrations; i.e., chemical concentrations at the potential points of contact discussed in Section 3.2. The approaches used to estimate exposure concentrations in the various environmental media (i.e., soil, groundwater, surface water, sediment, and ambient air) are presented in the following sections. The tables presenting the exposure point concentrations for soil (Tables 2-9-1 through 2-9-9), sediment (Tables 2-10-1 through 2-10-5), surface water (Tables 2-11-1 through 2-11-4), and groundwater (Tables 2-12-1 through 2-12-7) follow the text.

3.3.1 Exposure Concentrations in Soil

USEPA guidance (USEPA 1989, 1992d) recommends using a conservative estimate of the arithmetic mean of measured concentrations for the exposure point concentration, when evaluating long-term exposures. The 95% upper confidence limit (UCL) on the arithmetic mean of measured concentrations is used in calculating chronic daily intake (CDI), although the maximum measured concentration is used when the 95% UCL exceeds the maximum detected concentration (USEPA 1989). With the exception of Area 2 and Area 3, the 95% UCL was calculated for all data sets where the number of samples was greater than 10. At the request of USEPA, a 95% UCL for Areas 2 and 3 was not calculated, and the maximum concentration detected was used as the exposure point concentration (USEPA 1998e). In calculating the 95% UCL, assumptions about the distribution of the concentration data are necessary. In the baseline risk assessment, 95% UCL concentrations are calculated using the USEPA default equation for lognormally distributed data, the most common distribution for complete environmental data sets (USEPA 1992d).

For evaluating potential surface contact exposures, the lower of the 95% UCL and maximum detected concentration of a contaminant is obtained using soil samples collected from 0 to 2 feet below ground surface for current scenarios, and from 0 to 10 feet for the future scenarios. For evaluating potential exposures during utility excavation activities, the lower of the 95% UCL and maximum detected concentration of a contaminant is obtained using soil samples collected from a depth of 0 to 10 feet for the current and future scenarios, except in Areas 2, 3, and 4B. As mentioned previously, at USEPA's request, the maximum concentration was used as the exposure point for Areas 2 and 3. No wastes were disposed of in Area 4B, and no contaminants were detected in the subsurface soil sample from this Area (SB-096). Therefore, in Area 4B, the lower of the 95% UCL and maximum detected concentrations for all samples collected within a depth of two feet was used to evaluate potential future exposures during utility maintenance.

Subsurface soil sampling was very limited in Areas 2 and 3. However, from this limited data, it is known that the contamination in these two areas is heterogeneous, both in nature and distribution. Because of the limited data and at USEPA's request, the risk of soil exposures in these areas is based upon maximum concentrations. In order to more reasonably estimate the risk associated with these areas, further investigation would be required.

3.3.1.1 Exposure Concentrations in Soil for Utility Maintenance and Construction Scenarios. As discussed in Section 3.2, workers may contact soils extending from the ground surface to the bottom of an excavation during excavation activities for utility maintenance or construction. For utility maintenance in Areas 1, 2, 3, and 4B, excavations are assumed to extend to 10 feet below ground surface. For hypothetical future building construction in Areas 2 and 3, two excavation depths are evaluated: (1) 4 feet below ground surface, and (2) 10 feet below ground surface. Neither utility maintenance nor building construction scenarios are evaluated for Area 4A because it is a wetland. Only slab-on-grade construction scenarios are evaluated for Area 1 and Area 4B because of the shallow depth to groundwater in these areas.

<u>**Area 1**</u>

Surface Samples (0-2'): 14 samples, used to evaluate current routine worker
Subsurface Samples (0-4'): 28 samples, used to evaluate future construction worker
Subsurface Samples (0-10'): 86 samples, used to evaluate current and future utility worker, future routine worker, and future trespasser

For all chemicals detected at least once within the specified depth ranges (i.e.: 2 ft bgs, 4 ft bgs, or 10 ft bgs), the concentration in non-detect samples was assumed equal to one-half the detection limit for that sample. Chemicals not detected within a depth range were not included in the analysis for the corresponding scenario. The lower of the 95% UCL and maximum detected concentration for each chemical was used as the exposure point concentration.

Area 2

Surface Samples (0-2'): none

Subsurface Samples (2-4'): 12 samples, used to evaluate current trespassers and future construction worker (slab on grade)

Subsurface Samples (2-10'): 28 samples, used to evaluate current and future utility worker, future routine worker, future trespasser, and future construction worker

For Area 2, because there are no surface soil data, the subsurface soil concentrations were used to characterize the risks. This assumption is believed to be conservative because it does not account for the lower concentrations expected to be present in the clay cap placed over Area 2 wastes in the 1970's, and in the additional one-foot clay cap installed during recent remediation activities to limit surface water infiltration. For all chemicals detected at least once within the specified depth range (4 ft bgs or 10 ft bgs), the concentration in non-detect samples was assumed to be equal to one-half the detection limit for that sample. Chemicals not detected within the specified depth were not included in the analysis for the corresponding scenario. For each depth range, as requested by the USEPA, the maximum concentration was used as the exposure concentration.

Area 3

Surface Samples (0-2'): 14 samples, used to evaluate current trespassers

Subsurface Samples (0-4'): 20 samples, used to evaluate future construction worker (slab on grade)

Subsurface Samples (0-10'): 44 samples, used to evaluate current and future utility workers, future routine worker, future trespasser, and future construction worker.

For all chemicals detected at least once within the specified depths, the concentration in non-detect samples was assumed to be equal to one-half the detection limit for that sample. Chemicals not detected within the specified depth were not included in the analysis for the corresponding scenario. As in area 2, for each depth range, the maximum concentration was used as the exposure concentration.

Area 4B

Surface Sediment Samples (0-2'): 6 samples, used to evaluate current trespasser

Surface sediment concentrations were assumed to characterize the concentrations throughout an excavation in Area 4B. This assumption is conservative since no waste disposal occurred in this area, and no chemicals were detected in the soil boring sample collected at depth. For each chemical, the exposure concentration was assumed to be the 95% UCL on the arithmetic mean, or the maximum concentration, whichever was lower for the surface sediments.

3.3.2 Exposure Concentrations in Groundwater

As discussed in Section 3.2, workers are not currently exposed to on-site groundwater. However, within the last ten years, lower aquifer production wells were used in Area 1. Therefore, in order to reinforce the need for deed restrictions against the use of onsite groundwater, it is conservatively assumed that current workers are exposed to groundwater in Area 1 through ingestion and dermal contact and inhalation of volatile organic compounds (VOCs) while showering. In the future, on-site routine worker exposure to contaminants in lower aquifer groundwater would occur if on-site groundwater wells in Areas 1, 2, 3, and 4B are established to supplement the available municipal supply. Exposure could once again occur via ingestion, dermal contact while showering, and inhalation of VOCs. Potential exposure concentrations for Areas 1, 2, 3, and 4B are conservatively estimated using the maximum detected concentration for each contaminant in lower aquifer water, based on all production wells and on-site lower aquifer monitoring well data.

In addition, future worker exposure to contaminants in the upper aquifer may occur through dermal contact with groundwater and inhalation of vapors emitted from exposed groundwater during utility excavation and construction activities in Areas 1, 4B, and 5B, where the depth to groundwater is shallowest. In other areas, the groundwater is considerably deeper and direct exposures would not be expected. The exposure concentrations in Areas 1 and 4B are estimated using the maximum detected concentrations for each contaminant in groundwater, based on data from the upper aquifer monitoring wells located in or immediately adjacent to each area.

Consistent with USEPA Region 5 policy, potential future worker exposures (i.e., construction worker) to contaminants in off-site upper aquifer water in Area 5B are estimated using data from wells at the center of the plume. Of the four upper aquifer wells in Area 5B, only Well MW-48 is in the center of the plume. In addition to future use of the shallow aquifer, the lower aquifer in Area 5B could be used for future commercial/industrial uses. The primary direction of groundwater flow in this area is generally to the north, and thus the current on-site contaminant plume could potentially move into Area 5B. In order to conservatively account for the potential future off-site commercial/industrial risk of exposure to the on-site lower aquifer contamination, current on-site contaminant-specific maximums were used as the exposure point concentrations for Area 5B. The commercial use of the lower aquifer in Area 5B that is evaluated in this risk assessment is that of a labor-intensive, auto-detailing car wash facility. This type of facility would produce a water aerosol which would presumably represent full-body dermal exposure for the workers and inhalation of vapors during their entire work day.

As discussed in Section 3.2.6, off-site residential exposure to contaminants in groundwater may occur in Area 5A through ingestion, dermal contact, and inhalation of vapors during household use and through incidental ingestion and dermal contact during outdoor activities (i.e., gardening, swimming, etc.). Potential current exposures to contaminants in groundwater are estimated using data from existing private wells. The existing private well with contaminant concentrations corresponding to the highest overall potential risk is conservatively used to evaluate current off-site residential exposures. Potential future exposures to contaminants in lower aquifer water are estimated using the maximum concentration for each contaminant detected in any off-site well in Area 5A. This approach is considered conservative because the maximum concentrations for all contaminants do not all occur in the same well.

As discussed in Section 3.2, the shallow depth of the clay layer in the vicinity of the site and other factors are expected to preclude installation of wells into the upper aquifer (ENVIRON 1998). However, as a bounding estimate, future residential exposures to upper aquifer water are evaluated for outdoor exposure activities only. Consistent with USEPA Region 5 policy, potential future exposures to contaminants in upper aquifer water are estimated using the lower of the 95% UCL and maximum detected concentration data from wells at the center of the off-site plume (i.e., Wells MW-45 and MW-06 in Area 5A).

3.3.3 Exposure Concentrations in Sediment and Surface Water

Exposures of trespassers to sediments and surface water in Area 4A and 4B, and of residents to sediments in Area 6, are evaluated under both current and future scenarios. Exposures of trespassers to these media in Areas 1 and 2 are also evaluated under the future scenario. Exposures of workers to sediments and surface water in Area 1 are evaluated under both current and future scenarios, while exposures to these media in Area 2 and 4B are evaluated only under future scenarios since Areas 2 and 4B are not currently developed. In each of these areas, exposure concentrations are based on the lower of the 95% UCL and the maximum detected connection.

3.3.4 Exposure Concentrations in Air

Exposure concentrations in ambient air resulting from potential vapor and particulate emissions from soil, and from potential vapor emissions from groundwater and surface water, are estimated using mathematical models in combination with the exposure concentrations in soil, groundwater, and surface water. The vapor and particulate emission models for unsaturated soil, the vapor emission model for exposed and covered groundwater, and the air dispersion model for estimating on-source and off-source air concentrations are all recommended by USEPA (USEPA 1992, 1996a). Major features and input assumptions in the emission and dispersion modeling and all calculations were performed by Environ (ENVIRON 1998). The outputs of the air modeling are included in their entirety in the Environ RA (ENVIRON 1998).

Environ's air emission concentrations resulting from contaminated surface water, soil, and groundwater were used in this risk assessment. Because Environ calculated air emissions from soil for two depth ranges (0 to 2 feet and 2 to 10 feet), in some scenarios, these values were combined to determined a depth weighted average.

The model used to estimate vapor emissions from unsaturated soil is described by Jury et al. (1990) and by USEPA in its *Soil Screening Guidance* (USEPA 1996a). The model estimates the average vapor flux from the soil surface over a defined period of exposure under steady-state conditions, with the assumption that contaminants in soil extend to a finite depth (i.e., to the water table) and that no clean cover is present. Default values recommended by USEPA (1996a) are used for all soil properties, unless site-specific data are available. Chemical-specific transport properties (i.e., K_{oc}, Henry's law constant, diffusivity in air, and diffusivity in water) compiled by USEPA (1996a) are also used in the calculation of vapor flux.

The model used for estimating potential vapor emissions from exposed groundwater and surface water is recommended by USEPA (1992e). It estimates the steady-state vapor flux of contaminants using an overall mass transfer coefficient, which accounts for mass transfer of a chemical through water-air interfacial films. The concentration of a contaminant in the exposed groundwater is assumed to remain constant at the estimated exposure concentration. Henry's law constants compiled by USEPA (1996a) are used in the calculation of the overall mass transfer coefficients.

The model for estimating vapor emissions from groundwater below a layer of cover soil is a one-dimensional steady-state diffusion model using Fick's Law. The model estimates the steady-state vapor flux of contaminants from the water table, through the region of capillary rise, and through pore space in soil above the capillary fringe. The concentration of a contaminant in the groundwater is assumed to remain constant at the estimated exposure concentration. Henry's law constants and diffusion coefficients compiled by USEPA (1996a) are used in the calculations.

The particulate emission model (USEPA 1992e) for undisturbed soils is based on the suspension of surface soil by wind erosion. It estimates the emission of respirable soil particles, defined as being 10 μm in diameter or smaller (i.e., PM_{10}). The key parameters in the model that influence particulate emission are the threshold friction velocity for the soil and the mean annual wind speed. For the threshold friction velocity, which is correlated to the mode of the soil aggregate size distribution, USEPA's default mode aggregate size of 0.5 mm is used. A mean annual wind speed of 10.2 miles per hour (or 4.56 m/s) from the National Oceanic and Atmospheric Administration (NOAA 1993) for South Bend, Indiana is used. USEPA (1996a) default values are used for other model parameters, unless site-specific data are available.

Particulate emissions resulting from potential on-facility excavation in Areas 1 and 4B are expected to be insignificant since the water table in these areas is very shallow. Therefore, little dry soil would be exposed to become susceptible to airborne transport. Particulate emissions during hypothetical future excavations and construction in Areas 2 and 3 are evaluated using empirical data compiled by USEPA (1995b) which pertain to dust emission from "heavy construction operations."

Under non-excavation conditions, on-facility and off-site air concentrations are estimated using USEPA's Industrial Source Complex (ISCST3) model (USEPA 1995a). ISCST3 is an advanced steady-state Gaussian plume model that calculates chemical concentrations at specific downwind locations as a function of wind speed, atmospheric stability, temperature gradient, mixing height, and downwind distance. ISCST3 utilizes local hourly meteorological data records to define the conditions for dispersion. Data from the closest stations were used: Michiana Airport in South Bend, Indiana for surface meteorological conditions, and Bishop Airport in Flint, Michigan for upper air data. The on-site workers in each area are assumed to move freely throughout the area, and the applicable area-wide dispersion factor is estimated from the average of the dispersion factors developed for each receptor location within the area.

Other major assumptions used in the modeling are (ENVIRON 1998):

- The emission source is represented as a non-buoyant, zero-momentum area source;
- Suspended particles from the source remain suspended before reaching the receptor (i.e., there is negligible deposition and resuspension); and

- The physical setting of the facility and its immediate surroundings can be modeled as a rural environment with no significant obstructions (e.g., tall buildings, abrupt topography).

For excavation activities, on-site concentrations in air are estimated using a simple "box" model, while off-site concentrations are estimated using USEPA's ISCST3 model. The "box" model allows for screening level calculations near a ground level emission source (ENVIRON 1998).

Results of air emission and dispersion modeling were compared to ambient air monitoring conducted at the site in July 1997 (Focus 1997). Daily eight-hour ambient air samples were collected approximately 100 feet upwind and 100 feet downwind of the material handling activities in Area 2 during on-site excavation, trenching, and screening. Modeled emissions were estimated using: (1) maximum soil concentrations in Area 2; and (2) the lower of the maximum and 95% UCL soil concentrations in Area 2. These emissions were combined with maximum eight-hour average dispersion estimates for receptors located approximately 100 feet from a source, based on ISCST3. Modeled ambient air concentrations based on maximum Area 2 soil concentrations ranged from five-fold to 200-fold higher than the maximum measured ambient air concentrations. Modeled ambient air concentrations based on the lower of the maximum or 95% UCL soil concentrations more closely approximated the measured concentrations (i.e., modeled concentrations ranged from 0.9 to 30 times the measured concentrations). Thus, ambient air concentrations estimated in Environ's RA and utilized in this risk assessment are likely to be conservative estimates of potential concentrations based as they are on USEPA's emission models and the ISCST3 dispersion model (ENVIRON 1998).

Indoor air concentrations for indoor use of groundwater are estimated by applying a volatilization factor of 0.5 L/m^3 to the estimated concentrations of volatile organic compounds in groundwater. The volatilization factor is based on experimental data on the volatilization of radon from household uses of water and is recommended by USEPA (1991c). The volatilization factor is also consistent with the results of three-compartment, mass balance models (McKone 1987) simulating the transfer of VOCs from household uses of tap water and the distribution of the VOCs inside a home. The volatilization factor of 0.5 L/m^3 was also used to estimate air concentrations in on-site showers used by workers.

3.4 Estimation of Media Intake

Potential exposures via the pathways identified in Section 3.2 are calculated by multiplying the estimated contaminant concentrations in environmental media (identified in

Section 3.3) by the estimated intake of the environmental media by potentially exposed populations (human intake factor). The product of these two components is called the daily intake (USEPA 1992c). The daily intake is combined with toxicity values (presented in Section 4) to estimate theoretical carcinogenic risk and the potential for noncancer health hazards (presented in Section 5).

Intake is calculated differently when evaluating theoretical carcinogenic risk than when evaluating the potential for noncarcinogenic effects. For evaluating carcinogenic risk, intake is averaged over a lifetime (USEPA 1989) and is called the chronic daily intake (CDI). For evaluating noncarcinogenic effects, intake is averaged over the period of exposure and is called the daily intake (DI). The CDI and DI of a contaminant for a specific route of exposure (e.g., soil ingestion) are generally calculated using the following equations:

The general equation for estimating the human intake factor is as follows:

$$\text{Human Intake Factor(HIF)} = \frac{CR \cdot EF \cdot ED}{BW \cdot AT} \qquad \text{Equation(5)}$$

$$\text{Chronic Daily Intake} = \text{Concentration}_{medium} \cdot \text{Human Intake Factor}_{lifetime,\ route} \qquad \text{Equation (4)}$$

where:

HIF = Unit dose, $kg_{soil}/kg_{body\ weight}$ -day

CR = contact rate, which is either:

- soil ingestion rate, mg/day
- drinking water rate, L/day;
- dermal contact rate for soil exposures, mg/day, which is the product of the exposed skin surface area (SA), soil-to-skin adherence factor (AF), and absorption factor (ABS);
- dermal contact rate for water exposures, cm^3/day, which is the product of the skin surface area (SA), skin permeability coefficient (K_p), and exposure time.

EF = exposure frequency, days/year, which includes an exposure time (ET) term for the inhalation pathway;

BW = body weight, kg; and

ED = exposure duration, years;

AT = averaging time (AT) days, which is a lifetime of 70 years for carcinogens (AT_{carc}), and which is equal to the exposure duration for noncarcinogens ($AT_{noncarc}$).

It should be noted that for dermal contact, EF is expressed as events/day and ET is expressed in minutes/event or hours/event.

The factor values (e.g., ED, EF, etc.) and specific equations used to calculate media intakes for every route of exposure evaluated in this risk assessment are presented in the exposure factors tables (Tables 3-9 through 3-57). Estimates of media intake are developed for the following potential populations (receptors) and exposure scenarios, as identified in Section 3.2:

3.4.1 On-site Routine Worker (Areas 1, 2, 3, 4B)

- incidental soil/sediment ingestion
- dermal contact with soil/sediment
- inhalation of vapors and particulates in ambient air
- ingestion of groundwater indoors
- dermal contact with groundwater indoors
- inhalation of vapors from indoor groundwater use
- incidental ingestion of surface water outdoors (Areas 1, 2, 4B only)
- dermal contact with surface water outdoors

3.4.2 On-site Utility Worker (Areas 1, 2, 3, 4B)

- incidental soil/sediment ingestion
- dermal contact with soil/sediment
- inhalation of vapors and particulates in ambient air
- dermal contact with groundwater while excavating (Areas 1 and 4B only)
- inhalation of vapors from groundwater outdoors (Areas 1 and 4B only)
- ingestion of groundwater used indoors
- dermal contact with groundwater indoors
- inhalation of vapors from indoor groundwater use

3.4.3 On-site Construction Worker (Areas 1, 2, 3, 4B)

- incidental soil ingestion
- dermal contact with soil
- inhalation of vapors and particulates in ambient air
- dermal contact with groundwater while excavating (Areas 1 and 4B only)
- inhalation of vapors from groundwater outdoors (Areas 1 and 4B only)

3.4.4 *On-site Trespasser (Areas 1, 2, 3, 4A, 4B)*

- incidental ingestion of soil and/or sediment
- dermal contact with soil and/or sediment
- inhalation of vapors and particulates in ambient air
- incidental ingestion of surface water (Areas 1, 2, 4A, 4B only)
- dermal contact with surface water (Areas 1, 2, 4A, 4B only)
- inhalation of vapors emitted from surface water (Area 4A only)

3.4.5 *Off-site Resident (Areas 5A and 6)*

- incidental ingestion of soil (Area 5A only)
- dermal contact with soil (Area 5A only)
- incidental ingestion of sediment (Area 6 only)
- dermal contact with sediment (Area 6 only)
- inhalation of vapors and particulates in ambient air
- incidental ingestion of groundwater used outdoors (Area 5A only)
- dermal contact with groundwater used outdoors (Area 5A only)
- ingestion of groundwater used indoors (Area 5A only)
- dermal contact with groundwater while showering (Area 5A only)
- inhalation of vapors from household use of groundwater (Area 5A only)

3.4.6 *Off-site Construction Worker (Area 5B)*

- inhalation of vapors in ambient air
- dermal contact with groundwater while excavating

3.4.7 *Off-site Commercial Worker (Area 5B)*

- inhalation of vapors in ambient air
- dermal contact with groundwater (i.e., car wash)

According to USEPA (1995c) guidance, variability in the factors affecting exposure within a potentially exposed population should be considered in estimating potential current and future exposures. As one means of characterizing the distribution of possible exposures in a population, USEPA (1995c) recommends that both reasonable maximum exposure (RME) and central tendency estimates of exposure be developed. Central tendency estimates represent the average exposures in the population. RME estimates represent the exposures "above the 90th percentile of the population distribution, but not higher than the individual in the population who has the [maximum] exposure." (USEPA 1995c). The exposure factors for estimating central tendency and RME intakes and intake equations for each of the potential receptor groups are presented in the following sections and summarized in Tables 3-9 through 3-57, respectively. The factors discussed below apply to both current and future land use scenarios, unless otherwise noted.

3.4.8 On-site Routine Worker

The exposure factors used in the baseline risk assessment for workers engaged in routine industrial activities at the site are discussed below:

3.4.8.1 Contact Rates.

- **Incidental Ingestion Rate of Surface Soil/Sediment**

  The current and future routine worker is assumed to ingest 100 mg of soil/sediment per day under the RME scenario, and 50 mg of soil/sediment per day under the central tendency (CT) scenario. Consistent with USEPA guidance (1991a, 1997c), these ingestion rates are based on the adult soil ingestion rates presented in Calabrese et al. (1990).

  The routine worker is expected to primarily be exposed to surface soil in Areas 1, 2, and 3. Occasionally, the current routine worker could contact sediment in the fire pond in Area 1, and future routine workers could contact sediment in ditches in Area 2 and Area 4B. It is assumed that the worker would be in contact with sediment for up to an hour per day and the remainder of the eight-hour day would be in contact with soil. Since the total soil/sediment ingestion rate for the RME scenario is 100 mg/day, it is assumed that the ingestion rate of soil and sediment in Areas 1 and 2 would be 87.5 mg/day and 12.5 mg/day, respectively. Accordingly, it is assumed that the ingestion rate of soil and sediment in Areas 1 and 2 would be 43.75 mg/day and 6.25 mg/day, respectively, for the CT scenario. Since there is no sediment evaluated in Area 3 and no soil evaluated in Area 4B, the soil/sediment ingestion rate in these area is 100 mg per day under the RME scenario and 50 mg per day under the CT scenario.

- **Dermal Contact with Surface Soil/Sediment: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**

  Dermal contact is estimated from the product of exposed skin surface area, soil-skin adherence factor, and chemical-specific absorption factor. The product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for RME scenario and 0.2 mg/cm^2-event for the CT scenario. USEPA (1992f) recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 5,800 cm^2 (95th percentile of total body surface area for adult workers) for the RME scenario and 5,000 cm^2 (50th percentile of total body surface area for adult workers) for the CT scenario.

USEPA's (1998d) chemical-specific absorption factors (e.g., cadmium and PCB's) are used in this assessment. The generic absorption factors recommended in USEPA (1998b) guidance of 10% for organics and 1% for inorganics are used for all other chemicals lacking chemical-specific factors.

- **Incidental Ingestion Rate of Surface Water**

  Current and future routine workers in Area 1 could contact surface water in the fire pond, and future workers could contact surface water that is intermittently present in ditches in Area 2 and Area 4B. Under the RME and CT scenarios, the routine worker is assumed to incidentally ingest 0.05 liters of surface water per contact event. This ingestion rate is conservatively based on USEPA's (1989) ingestion rate for swimming of 0.05 L/hour, along with the assumption that the worker would be in contact with the water for up to an hour per day for both the RME and CT scenarios. The ingestion rate is conservative, considering that the worker is not swimming in the water, and thus the potential for incidental ingestion is lower (ENVIRON 1998).

- **Dermal Contact with Surface Water: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  Dermal contact with contaminants in water is estimated from the product of the exposed skin surface area and the chemical-specific dermal permeability coefficient (K_p). Consistent with exposed skin surface areas for soil exposure, the future routine worker is assumed to have 5,800 cm^2 of exposed skin for the RME scenario and 5,000 cm^2 of exposed skin for the CT scenario of exposure to either surface water or groundwater used outdoors. It is conservatively assumed that the entire exposed skin surface area would come into direct contact with water (ENVIRON 1998).

Chemical-specific permeability coefficients (K_p) were estimated using Equation 5.8 from USEPA (1992f), while a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established, based on USEPA (1992f) which states that the limiting permeability coefficient in the viable epidermis ranges from 0.1 to 1.0 cm/hr and that "...it seems reasonable to expect that experimentally measured permeability coefficients for chemical penetration across the skin from aqueous media (assuming that the chemical does not alter the barrier properties) are limited to one cm/hour".

As described above for incidental ingestion of surface water, the future routine worker is assumed to be in contact with surface water for one hour per day under both the high end and CT scenarios.

- **Ingestion Rate of Groundwater Used Indoors**

  For current and future worker scenarios, it is assumed that on-site wells installed in the lower aquifer could be used. The ingestion rate for this indoor use is USEPA's default for workers of 1 L/day for CT and 1.4 L/day for RME scenarios (USEPA 1993a).

- **Dermal Contact with Groundwater Used Indoors: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  For current and future scenarios, it is assumed that workers could use the water for showering, thereby exposing the total body surface area to groundwater. The RME surface area is assumed to be 23,000 cm^2 corresponding to the 95th percentile of measured total body surface areas for men (USEPA 1992f, 1997c). The central tendency surface area is assumed to be 20,000 cm^2, based on the mean total body surface areas for men (USEPA 1992f, 1997c).

  K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3}cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

  The RME exposure time is 20 minutes per shower and the CT exposure time is 10 minutes per shower (EPA, 1997c).

- **Inhalation Rate of Groundwater Used Indoors**

  For current and future worker scenarios, it is assumed that on-site wells installed in the lower aquifer could be used. The inhalation rate for this indoor use is USEPA's default for workers of 20 cubic meters (m^3)/day.

3.4.8.2 *Exposure Frequency.*

- **Frequency of Incidental Ingestion of Soil and Indoor Dust**

  Under RME scenario, the routine worker is expected to have an exposure frequency of 250 days/year, based on a 5-day work week for 50 weeks per year, consistent with USEPA (1991a) guidance. Under the CT scenario, the routine worker is expected to have an exposure frequency of 219 days/year, based on an average for all full and part-time workers (USEPA 1993a). These frequencies account for both outdoor ingestion of surface soil and indoor ingestion of dust.

- **Frequency of Dermal Contact with Soil and Indoor Dust**

  For routine workers, the frequency of dermal contact is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is 250 days per year for the RME scenario and 219 days/year for the CT scenario, accounting for both outdoor contact with surface soil and indoor contact with dust.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air, including Exposure Time (ET) Term**

  Under the RME scenario, the routine worker is expected to have an inhalation exposure frequency of 250 days/year, based on 5-day work week for 50 weeks per year, consistent with USEPA (1991a) guidance. As discussed above, under the CT scenario, workers are expected to have an inhalation exposure frequency of 219 days per year. Because of the high activity level expected for a worker, and therefore elevated inhalation rate, the exposure frequency is not adjusted by an exposure time (ET) term to account for the hours per day a receptor is at the site. Thus, the inhalation rate for the worker would correspond to 2.5 m^3/hr (i.e., 8 hour work day generates the default inhalation rate of 20 m^3/day).

- **Frequency of Incidental Ingestion of Surface Water**

  Current and future workers in Area 1 could contact surface water in the fire pond, and future workers could contact surface water that is intermittently present in ditches in Area 2 and Area 4B. Under the RME scenario, the routine worker is assumed to incidentally ingest surface water approximately once a week during the summer months, or 12 days per year. Under the CT scenario, the routine worker is assumed to incidentally ingest surface water once a month during the summer months, or three days per year.

- **Frequency of Dermal Contact with Surface Water**

  Frequency of dermal contact with surface water is expected to be the same as the frequency of incidental ingestion of surface water. Thus, the exposure frequency for a worker is 12 days per year for the RME scenario and three days per year for the CT scenario.

- **Frequency of Ingestion of Groundwater Used Indoors**
  It is assumed that current and future workers would ingest the water each work day. Thus, the exposure frequency for ingestion of water is 250 days per year under the RME scenario and 219 days per year for the CT scenario.
- **Frequency of Dermal Contact with Groundwater Used Indoors**
  It is assumed that current and future workers could use the water for showering during each work day. Thus, the exposure frequency for dermal contact is 250 days per year for the RME scenario and 219 days per year for the CT scenario.
- **Frequency of Inhalation of Vapors from Groundwater During Indoor Use**
  It is assumed that current and future workers could use the water for showering during each work day. Thus, the exposure frequency for inhalation exposures is 250 days per year for the RME scenario and 219 days per year for the CT scenario.

3.4.8.3 Exposure Duration. For the RME scenario, the routine worker is expected to work at the facility for 25 years, based on the standard default for worker tenure at one location (USEPA 1991a). For the CT scenario, the routine worker is expected to work at the facility for 5 years, based on the recommended central tendency value for worker tenure at one location (USEPA 1993a).

3.4.8.4 Body Weight. For both the RME and CT scenarios, the body weight of the routine worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1993a, 1997c).

3.4.8.5 Averaging Times. For both the RME and CT scenarios, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the RME and CT scenarios, the averaging time for noncarcinogenic effects is equal to the exposure duration in days. For year-round exposures, such as soil ingestion, the averaging time is equal to the number of days in a year multiplied by the number of years of exposure. For seasonal exposures, such as dermal contact with surface water, the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the RME scenario averaging time for a worker contacting surface water is calculated: (3 months/12 months) x (365 days/yr) x (25 years), which equals 1,825 days.

3.4.9 On-site Utility Worker

The exposure factors discussed below correspond to a potential current and future scenario in which workers engage in excavation activities in order to maintain underground utility lines without wearing the personal protective equipment currently required by ACS health and safety protocols.

3.4.9.1 Contact Rates.

- **Incidental Ingestion Rate of Surface and Subsurface Soil (Areas 1, 2, and 3)**
  For the RME scenario, the utility worker is assumed to ingest 100 mg of soil for 240 days per year and 480 mg of soil for 10 days per year, based on USEPA (1991a, 1993a). Under the CT scenario, the utility worker is assumed to ingest 50 mg of soil for 214 days per year and 100 mg of soil for 5 days per year, based on USEPA (1993a).
- **Dermal Contact with Surface and Subsurface Soil: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor (Areas 1, 2, and 3)**
  Dermal contact with soil is estimated from the product of the exposed skin surface area, the soil-skin adherence factor, and the chemical-specific absorption factor. The product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the RME scenario and 0.2 mg/cm^2-event for the CT scenario. USEPA (1992f) recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 5,800 cm^2 for the RME scenario and 5,000 cm^2 for the CT scenario.

  The estimates for absorption factors for the utility workers are assumed to be the same as those for the routine worker (as described in Section 3.4.8.1).
- **Incidental Ingestion Rate of Sediment (Area 4B only)**
  For the RME scenario, the utility worker is assumed to ingest 100 mg of sediment for 240 days per year and 480 mg of sediment for 10 days per year, based on USEPA (1991a, 1993a). Under the CT scenario, the utility worker is assumed to ingest 50 mg of soil for 214 days per year and 100 mg of soil for 5 days per year, based on USEPA (1993a).

- **Dermal Contact with Sediment: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor (Area 4B only)**

  Dermal contact with sediment is estimated from the product of the exposed skin surface area, the soil-skin adherence factor, and the chemical-specific absorption factor. The product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the RME scenario and 0.2 mg/cm^2-event for the CT scenario. USEPA (1992f) recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to sediment. Accordingly, surface area is assumed to be 5,800 cm^2 for the RME scenario and 5,000 cm^2 for the CT scenario.

  The estimates for absorption factors for the utility workers are assumed to be the same as those for the routine worker (as described in Section 3.4.8.1).

- **Dermal Contact with Groundwater (Areas 1 and 4B only) While Excavating: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  The dermal contact rate for water exposures is obtained from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The estimates for exposed skin surface area for the utility workers are assumed to be the same as those for the routine worker (as described in Section 3.4.8.1). That is, the exposed skin surface area is 5,800 cm^2 for RME exposures, and 5,000 cm^2 for CT exposures. The entire exposed skin area is conservatively assumed to come in direct contact with groundwater during excavation.

  K_p values were estimated using Equation 5.8 from USEPA (1992f) , and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

  For the RME and CT scenarios, the utility worker is conservatively assumed to be engaged in utility work that would bring him in contact with groundwater for eight hours per day, in Areas 1 and 4B only.

- **Ingestion Rate of Groundwater Used Indoors**

  For current and future utility worker scenarios, it is assumed that on-site wells installed in the lower aquifer could be used. The ingestion rate for this indoor use is USEPA's default for workers of 1 L/day for CT and 1.4 L/day for RME scenarios (USEPA 1993a).

- **Dermal Contact with Groundwater Used Indoors: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  For current and future scenarios, it is assumed that utility workers could use the water for showering, thereby exposing the total body surface area to groundwater. The RME surface area is assumed to be 23,000 cm^2 corresponding to the 95th percentile of measured total body surface areas for men (USEPA 1992f, 1997c). The central tendency surface area is assumed to be 20,000 cm^2, based on the mean total body surface areas for men (USEPA 1992f, 1997c).

  K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3}cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

  The RME exposure time is 20 minutes per shower and the CT exposure time is 10 minutes per shower (EPA, 1997c).
- **Inhalation Rate of Groundwater Used Indoors**
  For current and future utility worker scenarios, it is assumed that on-site wells installed in the lower aquifer could be used. The inhalation rate for this indoor use is USEPA's default for workers of 20 cubic meters (m^3)/day.

3.4.9.2 Exposure Frequency.

- **Frequency of Incidental Ingestion of Surface and Subsurface Soil (Areas 1, 2, and 3)**
  Excavation activities for utility workers in Areas 1, 2, and 3 are assumed to be conducted for two work-weeks per year (i.e., 10 days/year) for the RME scenario and one work-week (i.e., 5 days/year) for the CT scenario, based on the time estimated to maintain underground utility lines (ENVIRON 1998).
- **Frequency of Dermal Contact with Surface and Subsurface Soil (Areas 1, 2, and 3)**
  The frequency of dermal contact with soil during utility work is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is assumed to be 10 days per year for the RME scenario and five days/year for the CT scenario.
- **Frequency of Incidental Ingestion of Sediment (Area 4B only)**
  Excavation activities for utility workers in Area 4B are assumed to be conducted for two work-weeks per year (i.e., 10 days/year) for the RME scenario and one

work-week (i.e., 5 days/year) for the CT scenario, based on the time estimated to maintain underground utility lines (ENVIRON 1998).

- **Frequency of Dermal Contact with Sediment (Area 4B only)**
  The frequency of dermal contact with sediment in Area 4B during utility work is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is assumed to be 10 days per year for the RME scenario and five days/year for the CT scenario.
- **Frequency of Inhalation of Vapor and Particulates in Ambient Air**
  As noted above, the utility worker is assumed to be engaged in activities to maintain underground utility lines for 10 days per year under the RME scenario and five days per year under the CT scenario. The inhalation rate for the excavation worker is 20 m^3/day (USEPA 1991a).
- **Frequency of Dermal Contact with Groundwater While Excavating**
  The frequency with which a worker may have dermal contact with water while excavating is assumed to be equal to the frequency an excavation worker may incidentally ingest soil. Thus, the exposure frequency is assumed to be 10 days per year for the RME scenario and five days/year for the CT scenario.
- **Frequency of Ingestion of Groundwater Used Indoors**
  It is assumed that current and future utility workers would ingest the water each work day. Thus, the exposure frequency for ingestion of water is 250 days per year under the RME scenario and 219 days per year for the CT scenario.
- **Frequency of Dermal Contact with Groundwater Used Indoors**
  It is assumed that current and future utility workers could use the water for showering during each work day. Thus, the exposure frequency for dermal contact is 250 days per year for the RME scenario and 219 days per year for the CT scenario.
- **Frequency of Inhalation of Vapors from Groundwater During Indoor Use**
  It is assumed that current and future utility workers could use the water for showering during each work day. Thus, the exposure frequency for inhalation exposures is 250 days per year for the RME scenario and 219 days per year for the CT scenario.

3.4.9.3 Exposure Duration. For the RME scenario, the worker is expected to work at the facility for 25 years, based on the standard default for worker tenure at one location (USEPA 1991a). For the CT scenario, the worker is expected to work at the facility for five years, based on the USEPA guidance (USEPA 1993a) central tendency value for worker tenure at one location.

3.4.9.4 Body Weight. For both the RME and CT scenarios, the body weight of the utility worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1993a, 1997c).

3.4.9.5 Averaging Times. For both the RME and CT scenarios, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the RME and CT scenarios, the averaging time for noncarcinogenic effects is equal to the exposure duration in days. For year-round exposures, such as soil ingestion, the averaging time is equal to the number of days in a year multiplied by the number of years of exposure. For seasonal exposures, such as dermal contact with surface water, the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the RME scenario averaging time for a worker contacting surface water is calculated: (3 months/12 months) x (365 days/yr) x (25 years), which equals 1,825 days.

3.4.10 On-site Construction Worker

The exposure factors discussed below correspond to a potential future scenario in which workers engage in building construction activities in Areas 1, 2, 3, and 4B without wearing the proper personal protective equipment currently required by ACS health and safety protocols. The construction worker exposure is inherently a short-term, RME scenario and therefore only RME exposure factors are used for this population.

3.4.10.1 Contact Rates.

- **Incidental Ingestion Rate of Surface and Subsurface Soil**
  The construction worker is assumed to ingest 480 mg of soil per day, based on USEPA (1991a, 1993a).
- **Dermal Contact with Surface and Subsurface Soil: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**
  Dermal contact with soil is estimated from the product of the exposed skin surface area, the soil-skin adherence factor, and the chemical-specific absorption factor. The product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for RME scenario and 0.2 mg/cm^2-event for the CT scenario. USEPA (1992f) recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 5,800 cm^2.

The estimates for absorption factors for the construction workers are assumed to be the same as those for the routine worker (as described in Section 3.4.8.1).

- **Inhalation of Vapor and Particulates in Ambient Air**
  It was assumed that a construction worker would have a high inhalation rate due to intensive work activities. Therefore, the reasonable maximum exposure inhalation rate for an adult, 30 m^3/day, was used (USEPA 1991a).
- **Dermal Contact with Groundwater While Constructing/Excavating: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  The dermal contact rate for water exposures is obtained from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The RME estimate for exposed skin surface area for the construction workers is assumed to be the same as that for the routine worker (as described in Section 3.4.8.1). That is, the exposed skin surface area is 5,800 cm^2. The entire exposed skin area is conservatively assumed to come in direct contact with groundwater during construction and excavation activities.

  K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of 1 cm/hour for K_p was established based on USEPA (1992f).

  The construction worker is conservatively assumed to be engaged in construction work that would bring him in contact with groundwater for eight hours per day, in Areas 1, 4B, and 5B only.

3.4.10.2 Exposure Frequency.

- **Frequency of Incidental Ingestion of Surface and Subsurface Soil**
  Construction activities are assumed to be conducted five days per week for nine months or 196 days per year (ENVIRON 1998).
- **Frequency of Dermal Contact with Surface and Subsurface Soil**
  The frequency of dermal contact is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is assumed to be 196 days per year.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air**
  As noted above, the construction worker is assumed to be at the site for 196 days per year.
- **Frequency of Dermal Contact with Groundwater While Excavating**
  The frequency with which a worker may have dermal contact with water while excavating is assumed to be equal to the frequency an excavation worker may incidentally ingest soil. Thus, the exposure frequency is assumed to be 196 days per year.

3.4.10.3 Exposure Duration. The construction worker is expected to work at the site during the period of construction, or nine months. In the exposure calculation, the exposure duration is expressed as one year because the fraction of the year is accounted for in the exposure frequency.

3.4.10.4 Body Weight. The body weight of the construction worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1993a, 1997c).

3.4.10.5 Averaging Times. The averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). The averaging time for noncarcinogenic effects is equal to the exposure period in days: nine months (274 days).

3.4.11 On-site Trespasser

Potential exposures to trespassers on the site are estimated using exposure factors for adolescents, 9 to 18 years of age. Although other age groups could trespass at the site, adolescent exposures are expected to be more significant than those for adults due to the lower body weight of a 9 to 18 year old, and more significant than those of younger children, who are subject to greater adult supervision.

For the current scenario, it was assumed that trespassers were exposed to soil in Areas 2 and 3; sediment in Areas 2, 4A, and 4B; and surface water in Areas 4A and 4B. For the future scenario, it was assumed that trespassers were exposed to soil in Areas 1, 2, and 3; sediment in Areas 1, 2, 4A, and 4B; and surface water in Areas 1, 2, 4A, and 4B. Although Areas 2 and 3 are currently surrounded by a maintained fence, current exposure to trespassers in these areas is assessed in order to establish the need for control measures.

3.4.11.1 Contact Rates.

- **Incidental Ingestion Rate of Surface Soil/Sediment**

  The potential trespasser is assumed to ingest 100 mg of soil/sediment (50 mg of soil and 50 mg of sediment) per day under the RME scenario, and 50 mg of soil/sediment (25 mg of soil and 25 mg of sediment) per day under the CT scenario. Consistent with USEPA guidance (1991a, 1997c), these ingestion rates are based on the adult soil ingestion rates presented in Calabrese et al. (1990). These ingestion rates are conservative in that they assume that all of the soil ingested each day is from the site.

- **Dermal Contact with Surface Soil/Sediment: Exposed Skin Surface Area, Soil-Skin Adherence Factor, Absorption Factors**

  The trespasser is assumed to contact soil/sediment while walking through on-site Areas 1, 2, and 3 or while loitering in on-site Areas 4A and 4B.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the RME scenario and 0.2 mg/cm^2-event for the CT scenario. USEPA (1992f) recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 4,400 cm^2 for the RME scenario which is 25% of the 95th percentile of total body surface areas for 9 to 18 year olds. Similarly, surface area is assumed to be 3,600 cm^2 for the CT scenario, using 25% of the 50th percentile total body surface areas for this age group.

  As described above for other receptors, USEPA's (1998b) chemical-specific absorption factors are conservatively used in this assessment. The generic absorption factors recommended in USEPA (1998b) guidance of 10% for organics and 1% for inorganics are used for all other chemicals.

- **Inhalation of Vapor and Particulates in Ambient Air**

  The potential trespasser is assumed to inhale vapors and particulates from soil at a rate of 20 m^3/day under both the RME and CT scenarios (USEPA 1991).

- **Incidental Ingestion Rate of Surface Water**

  Under the RME and CT scenarios, the trespasser is assumed to incidentally ingest 0.05 liters of water per day while engaging in recreational activities on-site such as splashing water in the marsh in Area 4A or the occasional puddle in Areas 1, 2, 3, and 4B. The ingestion rate is conservatively based on the amount of water expected to be ingested while swimming, 0.05 L/hour, presented in USEPA (1989), and the assumption that the trespasser will contact surface water for two hours per day.

- **Dermal Contact with Surface Water: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  Dermal contact with contaminants in water is estimated from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The body surface areas provided in USEPA (1992f) were used to estimate the exposed surface areas for a trespasser between the ages of 9 and 18. For the RME scenario, the trespasser is assumed to have an exposed skin surface area of 4,400 cm^2, based on the assumption that 25% of the trespasser's total body surface area has the potential to contact water and using the 95th percentile of total body surface areas for this age group. For the CT scenario, the trespasser is assumed to have an exposed skin surface area of 3,600 cm^2, using 25% of the 50th percentile total body surface areas for this age group.

  Chemical-specific K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

  The trespasser is expected to be on facility property for up to four hours per day under the RME scenario and two hours per day under the CT scenario, consistent with USEPA Region 5 guidance. It is assumed that half the time spent at the site would involve direct contact with marsh or puddle water (i.e., two hours/day and one hour/day for the RME and CT scenarios, respectively).

- **Inhalation Rate of Vapors from Surface Water**

  The potential trespasser is assumed to inhale vapors emitted from surface water at a rate of 20 m^3/day or 0.83 m^3/hr under both RME and CT scenarios (USEPA 1991).

3.4.11.2 Exposure Frequency.

- **Frequency of Incidental Ingestion of Soil/Sediment**

  The standard default Region 5 exposure frequency for the trespasser scenario is assumed for both the current and future scenarios. Therefore, the frequency of trespassing is 54 days per year under the RME scenario and 12 days per year under the CT scenario. The RME scenario assumes trespassing one day per week in April, May, September, and October and three days per week during the summer months of June, July, and August. The CT scenario assumes one day per week during the summer months of June, July, and August (ENVIRON 1998).

- **Frequency of Dermal Contact with Soil/Sediment**
  Dermal contact with soil/sediment is assumed to occur with the same frequency as soil/sediment ingestion. Thus, the exposure frequency is 54 days per year for the RME scenario and 12 days per year for the CT scenario.
- **Frequency of Inhalation of Vapor and Particulates in Ambient Air, including Exposure Time (ET) Term**
  The frequency that a trespasser inhales vapor or airborne particulate matter from the site is assumed to be equal to the exposure frequency described above for contact with soil. For the inhalation pathway, the exposure frequency is adjusted with an exposure time (ET) term to account for the hours per day a receptor is in direct contact with soil in a given area. For example, although it is assumed that a trespasser is on site for 4 hours per day, for areas with both soil and sediment available (e.g., Area 1 and Area 2), it was assumed that one-half that time would be spent contacting soil and the other half would be spent contacting sediment. Therefore, for Areas 1 and 2, the trespasser is assumed to potentially inhale site contaminants for 2 out of 24 hours per day for both the current and future RME scenarios. Sediment was not evaluated in Area 3; therefore, trespassers were assumed to spend all of their time in direct contact with soil and potentially inhale site contaminants for 4 out of 24 hours per day for both the current and future RME scenarios. Central tendency exposures in each area were assumed to be one-half of the RME exposure time.
- **Frequency of Incidental Ingestion of Surface Water**
  Under the RME scenario, the trespasser is assumed to incidentally ingest surface water approximately once a week during the summer months, or 12 days per year. Under the CT scenario, the trespasser is assumed to incidentally ingest surface water once a month during the summer months, or three days per year (ENVIRON 1998).
- **Frequency of Dermal Contact with Surface Water**
  The frequency that a trespasser may have dermal contact with surface water is assumed to be equal to the frequency that a trespasser may incidentally ingest surface water as described above.
- **Frequency of Inhalation of Vapors from Surface Water (Area 4A only)**
  The frequency that a trespasser may inhale vapors from surface water in Area 4A is assumed to be equal to the frequency that a trespasser incidentally ingests surface water. The exposure time is equal to the number of hours per day a trespasser is in

direct contact with surface water in the area. Therefore, it was assumed that a trespasser would inhale vapors for 4 hours per day under the RME scenario and 2 hours per day under the CT scenario while trespassing in Area 4A.

3.4.11.3 Exposure Duration. An exposure duration of 10 years is assumed for the potential trespasser under the RME scenario, based on the total years in the 9 to 18-year-old age group. CT exposure durations are likely to be much shorter than this given that the site is an active manufacturing facility. In addition, the availability of recreational areas nearby (i.e., Oak Ridge Prairie Park) makes extended trespassing at the site less likely. Therefore, an exposure duration of two years is assumed for the trespasser under the CT scenario (ENVIRON 1998).

3.4.11.4 Body Weight. A body weight of 50 kg is used for the trespasser under both the RME and CT scenario, based on the average body weight for individuals ages 9 to 18 years (USEPA 1997c).

3.4.11.5 Averaging Times. For both the RME and CT scenarios, the averaging time for evaluating carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the RME and CT scenarios, the averaging time for evaluating noncarcinogenic effects is equal to the exposure duration in days. Since trespassing is expected to be a seasonal exposure (i.e., occurring during only three to seven months of the year), the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the RME scenario averaging time for a trespasser contacting sediment in Area 4A is calculated: (7 months/12 months) x (365 days/year) x (10 years), which equals 2,129 days.

3.4.12 Off-site Resident

Potential exposures to residential receptors are estimated using exposure factors for adults and for children (ages zero to six).

3.4.12.1 Contact Rates.

- **Incidental Ingestion Rate of Soil and Sediment**
  Under the RME scenario, the adult and child resident are assumed to ingest 100 mg of soil/sediment per day and 200 mg of soil/sediment per day, respectively, based on USEPA (1993a, 1997c). Under the CT scenario, the adult and child resident are

assumed to ingest 50 mg/day and 100 mg/day, respectively, based on USEPA (1997c).

- **Dermal Contact with Soil and Sediment: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**

  Adult and child residents in Area 5A are assumed to contact soil in their yards. The adult and child residents in Area 6 are assumed to contact sediment from a stream in their yard.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the RME scenario and 0.2 mg/cm^2-event for the CT scenario. USEPA (1992f) recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, adult surface area is assumed to be 5,800 cm^2 for the RME scenario and 5,000 cm^2 for the CT scenario. Surface area for child residents is assumed to be 2,100 cm^2 for the RME scenario and 1,800 cm^2 for the CT scenario.

  As described above for other receptors, USEPA's (1998b) chemical-specific absorption factors are conservatively used in this assessment. The generic absorption factors recommended in USEPA (1998c) guidance of 10% for organics and 1% for inorganics are used for all other chemicals.

- **Incidental Ingestion Rate of Groundwater During Outdoor Activities**

  Residents may contact groundwater while engaging in outdoor activities that could potentially involve the use of groundwater from a private well, such as watering a lawn or washing a car. To evaluate this pathway, the adult resident is assumed to use groundwater while gardening. The child resident is assumed to be exposed to groundwater used in a swimming/wading pool.

  Under both the RME and CT scenarios, the adult resident is assumed to ingest 0.05 liters of water per day. This ingestion rate is conservatively based on the amount of water expected to be ingested while swimming, 0.05 L/hour, presented in USEPA (1989) and the expectation that the resident would water the lawn for one hour per day, based on the estimated time spent gardening (USEPA 1997c).

  The child resident is assumed to ingest 0.15 liters per day under the RME scenario and 0.05 liters per day under the CT scenario. These ingestion rates are based on USEPA guidance for ingestion while swimming (USEPA 1989) and the assumption that a child spends three hours per day swimming/wading under the RME scenario and one hour per day swimming/wading under the CT scenario (USEPA 1997c).

- **Ingestion Rate of Drinking Water**
  Based on the 90th percentile drinking water ingestion rates provided by USEPA (1989, 1991a), RME drinking water rates of 2 L/day for adults and 1 L/day for children were used or ingestion of drinking water obtained from groundwater. For CT exposures, adults are expected to drink 1.4 L/day and children are expected to drink 0.5 L/day, based on average drinking water ingestion rates (USEPA 1989, 1997c).
- **Dermal Contact with Groundwater During Outdoor Activities: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  Dermal contact with contaminants in water is estimated from the product of the exposed skin surface area and the permeability constant for a chemical. The adult resident is assumed to use groundwater for watering the lawn. The assumed exposed skin surface areas while watering the lawn are 5,800 cm^2 for the RME scenario and 5,000 cm^2 for the CT scenario (USEPA 1992f). For both the RME and CT scenarios, the adult resident is expected to water the lawn for one hour per day (USEPA 1997c).

  The child resident is assumed to be exposed to groundwater in a swimming/wading pool. The assumed skin surface areas are 8,400 cm^2 for the RME scenario and 7,200 cm^2 for the CT scenario. These are based on the total body surface area of boys and girls, ages one to six (USEPA 1997c). A child resident is assumed to swim/wade for three hours per day and one hour per day for the RME and CT scenarios, respectively (USEPA 1997c).

  Chemical-specific K_p values are estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).
- **Dermal Contact with Groundwater While Adult Showering or Child Bathing: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  While body exposure is used for both the RME and CT showering/bathing scenarios (i.e., 23,000 and 20,000 cm^2 for adults and 8,400 and 7,200 cm^2 for children).

  Based on USEPA (1997c), the RME exposure time for an adult shower is 35 minutes per day and the CT exposure time for an adult shower is 10 minutes per day. Based on USEPA (1997c), the RME exposure time for child bathing is 45 minutes per bath and the CT exposure time is 20 minutes.

Chemical-specific K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

3.4.12.2 Exposure Frequency.

- **Frequency of Incidental Ingestion of and Dermal Contact with Soil**
  Under both the CT and RME scenario, adult and child residents in Area 5A are assumed to have an exposure frequency of 350 days per year (USEPA 1991a).
- **Frequency of Incidental Ingestion of Sediment**
  The adult resident in Area 6 is assumed to ingest sediment from a stream in his yard during periodic removal of dead branches and leaves from the stream. For the RME scenario, the resident is assumed to clean out the stream one day per month in the Spring (3 months) and Fall (3 months) for a total of 6 days per year. For the CT scenario, the resident is assumed to clean out the stream for one day in the Spring and one day in the Fall for a total of two days per year (ENVIRON 1998).

  The child resident is expected to ingest sediment when playing in and around a stream in his yard. A child is only expected to play near the stream when weather conditions make this form of play appealing, i.e., the water and mud are not too cold. According to data compiled by NOAA (1993), mean temperatures in South Bend, Indiana, are about 70 degrees or warmer for only three months per year (i.e., June, July and August), based on 30 years of data. Thus, playing near the stream would be most attractive to children during the summer months. The sediment would not be available for contact when it is frozen or snow covered. According to data compiled by NOAA (1993), the mean temperatures in South Bend, Indiana, are below freezing for three months per year (i.e., December, January and February). Thus, the sediment is not available for contact during the winter. On this basis, it is assumed that the child resident will play near the stream for four days a week during the summer (13 weeks) and one day per week during the Spring (13 weeks) and Fall (13 weeks) for a total of 78 days per year, under the high end scenario. For the CT scenario, the child resident is assumed to play near the stream for four days a week during the summer only for a total of 52 days per year.

- **Frequency of Dermal Contact with Sediment**
  The frequency with which a resident has dermal contact with sediment is assumed to be the same as the frequency a resident may incidentally ingest sediment. Thus, the exposure frequency is six days per year and two days per year for the RME and CT scenarios, respectively, for the adult resident, and 78 days per year and 52 days per year for the RME and CT scenarios, respectively, for the child resident.
- **Frequency of Inhalation of Vapor and Particulates in Ambient Air, including Exposure Time (ET) Term**
  The resident is assumed to experience inhalation exposures for 350 days/year for the RME and CT exposure scenarios, based on USEPA (1991a, p. 5) guidance which states "...the common assumption that workers take two weeks of vacation per year can be used to support a value of 15 days per year spent away from home (i.e., 350 days/year spent at home)." The resident is expected to be home for 24 hours per day for the high end scenario. For the CT scenario, the resident is assumed to be home for 18.4 hours out of a 24 hour day (76% of the time), based on recent USEPA (1997c) guidance which states that residents spend 16.4 hours indoors and 2 hours outdoors at one's residence. This is consistent with USEPA (1997c) guidance which states that the average adult spends 64% of his time at home.

  In addition, hypothetical residential inhalation exposures are assumed to occur during on-site excavation activities for 10 days/year under the RME scenario and five days/year under the CT scenario, based on the number of days per year workers are expected to excavate on-site to maintain underground utility lines. Residential inhalation exposure during excavation activities is only assumed to occur for eight out of 24 hours per day, based on the length of a standard work day.
- **Frequency of Incidental Ingestion of Groundwater During Outdoor Activities**
  For the RME and CT scenarios, the adult resident is assumed to ingest groundwater while watering the lawn for 40 days per year, based on the suggested gardening frequency in USEPA (1992f, 1997c).

  For the RME scenario, the child resident is assumed to ingest groundwater while swimming/wading for 36 days per year, which corresponds to the 90th percentile swimming frequency of young children of 12 days per month from mid-June through mid-September (USEPA 1997c).

  For the CT scenario, the child resident is assumed to swim in a home swimming/wading pool 9 days per year. This corresponds to the 50th percentile swimming frequency of young children of three times per month (USEPA 1997c) from mid-June to mid-September.

- **Frequency of Ingestion of Drinking Water**

  For both the RME and CT scenarios, the resident is assumed to ingest drinking water for 350 days/year, based on the days per year residents are assumed to spend at home (USEPA 1991a).

- **Frequency of Dermal Contact with Groundwater During Outdoor Activities**

  The frequency with which a resident may contact groundwater while outdoors is assumed to be equal to the frequency a resident may ingest water outdoors as described above. Thus, the adult resident is assumed to contact groundwater outdoors 40 days per year for the RME and CT scenarios. The child resident is assumed to contact groundwater outdoors 36 days per year under the RME scenario and 9 days per year under the CT scenario.

- **Frequency of Dermal Contact with Groundwater While Showering/Bathing**

  For both the RME and CT scenarios, the adult resident is assumed to shower in groundwater for 350 days/year, based on the days per year residents are assumed to spend at home (USEPA 1991a) and an assumed showering frequency of once per day (USEPA 1997c). The child resident (ages 1-6 years) is assumed to take a bath 10 times per week (500 days/year) for the RME scenario and 5 times per week (250 days/year) for the CT scenario.

- **Frequency of Inhalation of Vapors from Groundwater During Household Use Including Exposure Time (ET) Term**

  For both the RME and CT scenarios, the adult and child residents are assumed to inhale contaminants from groundwater in their homes for 350 days/year, based on the days per year residents are assumed to spend at home (USEPA 1991a). For the inhalation pathway, the exposure frequency is adjusted by an exposure time (ET) term to account for the hours per day a receptor is expected to inhale contaminants indoors. For the RME scenario, the residents are assumed to be in their home 23.3 hours per day based on the 90th percentile value for the estimated time spent indoors at home presented in USEPA (1997c) guidance. For the CT scenario, the residents are assumed to be in their home 16.4 hours per day based on the 50th percentile value for the estimated time spent indoors at home presented in USEPA (1997c) guidance.

3.4.12.3 Exposure Duration. For the RME scenario, the adult resident is assumed to live adjacent to the site for 24 years, based on the 90th percentile for individuals living at one residence (USEPA 1989, 1991a). For the CT scenario, the adult resident is assumed to live adjacent to the facility for 9 years, based on the median number of years that individuals live at one residence (USEPA 1989, 1991a). Under both the RME and CT scenarios, the child resident is assumed to live adjacent to the site for six years, based on the number of years in the child's one to six year old age group.

3.4.12.4 Body Weight. For both the RME and CT scenarios, the body weight of the adult resident is assumed to be 70 kg based on the mean adult body weight (USEPA 1997c, 1993a). For both the RME and CT scenarios, the body weight of the child resident is assumed to be 15 kg based on the mean body weight for a child (USEPA 1991a, 1997c).

3.4.12.5 Averaging Times. For both the RME and CT scenarios, the averaging time for evaluating carcinogenic risks is equal to a lifetime of 70 years (i.e., 25,550 days). For both the RME and CT scenarios, the averaging time for evaluating noncarcinogenic effects is equal to the exposure duration in days. For year-round exposures, such as showering or bathing, the averaging time is equal to the number of days in a year multiplied by the number of years of exposure. For seasonal exposures, such as swimming in an outdoor pool, the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the averaging time for child swimming/wading scenario is calculated: (3 months/12 months) x (365 days/year) x (6 years), which equals 548 days (ENVIRON 1998).

3.4.13 Off-site Construction Worker (Area 5B)

The exposure factors used in the baseline risk assessment for future construction workers engaged in excavation activities in Area 5B are discussed below.

3.4.13.1 Contact Rates.

- **Dermal Contact with Groundwater While Excavating: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  The dermal contact rate for water exposures is obtained from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The estimates for exposed skin surface area for the excavation workers are assumed to be the same as those for the routine worker (as described in Section 3.4.8.1). That

is, the exposed skin surface area is 5,800 cm^2 for RME exposures, and 5,000 cm^2 for CT exposures. The entire exposed skin area is conservatively assumed to come in direct contact with groundwater during excavation.

K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic contaminants that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

For the RME and CT scenarios, the excavation worker is conservatively assumed to be engaged in excavation work that would bring him in contact with upper aquifer groundwater for eight hours per day, in Area 5B.

- **Inhalation of Vapor in Ambient Air**
  The inhalation rate for the construction worker is 20 m^3/day (USEPA 1991a).

3.4.13.2 Exposure Frequency.

- **Frequency of Dermal Contact with Surface and Subsurface Soil**
  Construction activities are assumed to be conducted five days per week for nine months or 196 days per year.
- **Frequency of Inhalation of Vapor in Ambient Air**
  As noted above, the construction worker is assumed to be at the site for 196 days per year.

3.4.13.3 Exposure Duration. The construction worker is expected to work at the site during the period of construction, or nine months. In the exposure calculation, the exposure duration is expressed as one year because the fraction of the year is accounted for in the exposure frequency.

3.4.13.4 Body Weight. The body weight of the construction worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1993a, 1997c).

3.4.13.5 Averaging Times. The averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). The averaging time for noncarcinogenic effects is equal to the exposure period in days: nine months (274 days).

3.4.14 Off-site Commercial Worker (Area 5B)

The exposure factors used in the baseline risk assessment for future off-site exposure to lower aquifer groundwater for commercial workers (e.g., car wash facility) in Area 5B are discussed below.

3.4.14.1 Contact Rates.

- **Dermal Contact with Groundwater Used Indoors: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  Workers in Area 5B could use groundwater for commercial / industrial purposes (i.e., auto-detailing car wash). The commercial lower aquifer use evaluated here is that of a labor-intensive, auto-detailing car wash facility. Thus workers would be exposed to a body-soaking water aerosol during every work day. It is conservatively assumed that this type of work would include full-body exposure to groundwater. The RME surface area is assumed to be 23,000 cm^2 corresponding to the 95th percentile of measured total body surface areas for men (USEPA 1992f, 1997c). The central tendency surface area is assumed to be 20,000 cm^2, based on the mean total body surface areas for men (USEPA 1992f, 1997c).
- **Inhalation Rate of Groundwater Used Indoors**
  It is assumed that wells could be installed in the lower aquifer of Area 5B to be used for commercial/industrial purposes. The inhalation rate for this indoor use is USEPA's default for workers of 20 cubic meters (m^3)/day.

3.4.14.2 Exposure Frequency.

- **Frequency of Dermal Contact with Groundwater Used Indoors**
  If a well is installed in the future, it is assumed that workers would be exposed to groundwater during each work day. Thus, the exposure frequency for dermal contact is 250 days per day for the RME scenario and 219 days per year for the CT scenario.
- **Frequency of Inhalation of Vapors from Groundwater During Indoor Use**
  Auto-detailing car wash workers would be exposed to a body-soaking water aerosol during every work day. Thus, the exposure frequency for inhalation exposures is 250 days per year for the RME scenario and 219 days per year for the CT scenario.

3.4.14.3 Exposure Duration. For the RME scenario, the commercial worker is expected to work at this location for 25 years, based on the standard default for worker tenure at one location (USEPA 1991a). For the CT scenario, the worker is expected to work at the facility for 5 years, based on the recommended central tendency value for worker tenure at one location (USEPA 1993a).

3.4.14.4 Body Weight. For both the RME and CT scenarios, the body weight of the commercial worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1993a, 1997c).

3.4.14.5 Averaging Times. For both the RME and CT scenario, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the RME and CT scenarios, the averaging time for noncarcinogenic effects is equal to the exposure duration in days. Thus for this year-round groundwater exposure, the averaging time is equal to the number of days in a year multiplied by the number of years of exposure (i.e., RME = 25 years x 365 days/year or 9,125 days and CT = 5 years x 365 days/years or 1,825 days).

4.0 Toxicity Assessment

The primary objectives of a toxicity assessment are to: (1) identify the types of toxic effects associated with chemicals of potential concern; (2) characterize the conditions (i.e., route and duration) of exposure under which these effects might occur; and (3) determine the relationship between the magnitude of human exposure and the potential for adverse health effects. The following sections discuss the compilation of USEPA-derived toxicity values, and approaches to evaluating potential cancer risk and noncancer hazards when USEPA-derived toxicity values are unavailable (ENVIRON 1998).

4.1 USEPA Toxicity Values

The USEPA Integrated Risk Information System (IRIS) is used as the primary source of USEPA-derived toxicity values for chemicals of potential concern at the ACS NPL Site. When a toxicity value is not available in IRIS for a constituent, the most current version of the USEPA Health Effects Assessment Summary Tables (HEAST) is used to obtain toxicity values. The toxicity values compiled from IRIS are current as of October 1998 (USEPA 1998b). The toxicity values compiled from HEAST are current as of the July 31, 1997 edition (USEPA 1997a).

For evaluating carcinogenic risks, USEPA-derived cancer slope factors (CSFs) and unit risk factors (URFs) are compiled for constituents having a USEPA weight-of-evidence classification of group A, B, or C. The CSFs are 95% upper confidence bounds on the risk per unit dose. The risk of developing cancer from exposure to a chemical substance is expected to be less than the risk calculated using the CSF or URF value.

For evaluating noncarcinogenic hazards associated with the potential exposures, USEPA-derived reference doses (RfDs) and reference concentrations (RfCs) are used. The chronic RfD and chronic RfC values represent conservative estimates of the daily exposure which can be received by individuals in the general population, including sensitive subpopulations, that are likely to be without an appreciable risk of deleterious effects during a lifetime (USEPA 1989). The subchronic RfD and subchronic RfC values represent conservative estimates of the daily exposure which can be received by individuals in the general population, including sensitive subpopulations, that are likely to be without an appreciable risk of deleterious effects during a portion of a lifetime (i.e., exposure periods between two weeks and seven years) (USEPA 1989). USEPA's derivations of RfDs and RfCs typically incorporate several uncertainty (or modifying) factors which, in combination, can be as large as 10,000-fold.

Oral CSFs and oral RfDs are used for evaluating oral exposures. For evaluating inhalation exposures, URFs and RfCs are used where available. Dermal exposures are evaluated using oral CSFs and oral RfDs, as discussed in Section 4.2.3. Subchronic toxicity values are used for exposures with averaging periods of less than one year (e.g., swimming exposures that occur only during summer months). The toxicity values compiled from IRIS and HEAST are presented in Tables 4-1 through 4-6, along with their associated reference citations.

As shown in Tables 4-2 and 4-4, IRIS provides several CSFs and URFs for polychlorinated biphenyls (PCBs, including Aroclors 1242, 1248, 1254, and 1260). The cancer potency of PCB mixtures is determined using a tiered approach that depends, in part, on the route of exposure. The "high risk and persistence" CSFs and URFs apply to exposures to PCBs via sediment or soil ingestion, dust inhalation, dermal exposure (if an absorption factor has been applied), and early-life exposures. The "low risk and persistence" CSFs and URFs apply to exposures via ingestion of water-soluble congeners, inhalation of evaporated congeners, and dermal exposure (if no absorption factor has been applied). Tables 4-2 and 4-4 provide the upper-bound slope factors for both tiers.

4.2 Constituents Without Published USEPA Toxicity Values

4.2.1 Constituents Without Toxicity Values in IRIS or HEAST

Several of the constituents detected at or near the Site do not have toxicity values in IRIS or HEAST. USEPA's National Center for Environmental Assessment (NCEA) has provided toxicity values for the following constituents without any values in IRIS or HEAST: 1,1,1-trichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-hexanone, trichloroethene, naphthalene, and cobalt. NCEA has also provided toxicity values for the following constituents which have IRIS and/or HEAST values for some toxicity types, but not for others: benzene, carbon tetrachloride, chlorobenzene, chloroethane, chloroform, chloromethane, ethylbenzene, hexachlorobutadiene, tetrachloroethene, toluene, xylenes (total), and bis(2-ethylhexyl) phthalate.

The toxicity values for the following constituents presented in Tables 4-1 through 4-6 are derived from similar chemicals with toxicity values from IRIS, HEAST or NCEA:

- **m,p-Xylene**
  The toxicity values (RfDs) for xylenes (total) are used for the m,p-xylene isomers.
- **o-Xylene**
  The toxicity value (RfDs) for xylenes (total) is used for the o-xylene isomer

- **Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene**
  These carcinogenic polycyclic aromatic hydrocarbons (PAHs) are assigned oral CSF values following USEPA guidance (1993b), which provides cancer potency values for carcinogenic PAHs relative to benzo(a)pyrene.
- **alpha- and gamma-Chlordane**
  The toxicity values (CSF, URF, RfD, RfC) for Chlordane from IRIS are used for the isomers alpha- and gamma-Chlordane.
- **Chromium (total)**
  In the RI and subsequent characterization studies, chromium was measured as chromium (total), rather than speciated chromium (III) and chromium (VI). Hexavalent chromium, unlike trivalent chromium, is evaluated by USEPA as a human carcinogen. The chromium detected in soil/sediment is assumed to be present as trivalent chromium and therefore the toxicity data for chromium (III) is used. Hexavalent chromium is highly soluble and trivalent chromium is relatively insoluble (EPA 1989b). In addition, studies indicate that under most common aquifer conditions the hexavalent form predominates in solution (Henderson 1994). Therefore, the toxicity data for chromium (VI) was used to evaluate chromium exposure in groundwater and surface water.
- **Endosulfan I**
  The toxicity values (RfDs) for Endosulfan are used for Endosulfan I.

4.2.2 Lead

4.2.2.1 Child Lead Exposures. USEPA typically evaluates the health effects of lead in children by using blood lead levels as an index of exposure, rather than through a comparison of lead uptake to an RfD. For evaluating exposure of children to lead in soil, other environmental media, and the diet, USEPA has developed an Integrated Exposure Uptake Biokinetic (IEUBK) model to estimate blood lead levels (USEPA 1994b). Current USEPA Office of Solid Waste and Emergency Response (OSWER) guidance calls for the establishment of cleanup goals so that a typical child or group of children with similar exposure would have an estimated risk of no more than 5 percent exceeding a blood lead level of 10 µg/dL (USEPA 1996b, 1994c). USEPA (1994c, p. 8) states that "this 10 µg/dL blood lead level is based upon analyses conducted by the Centers for Disease Control and EPA that associate blood lead levels of 10 µg/dL and higher with health effects in children; however, this blood lead level is below a level that would trigger medical intervention." The IEUBK model is used in this assessment to evaluate the potential for elevated (> 10 μg/dL) blood lead levels in child residents under current and future land use exposure scenarios.

4.2.2.2 Adult/Fetal Lead Exposures. Blood lead levels are also used to evaluate blood lead levels in the fetuses of females of child-bearing age exposed to lead in soil. The USEPA action level of 10 μg/dL is used to evaluate the fetal blood lead levels of worker and trespasser populations in this assessment. Because the IEUBK model is not applicable to adults, USEPA (1996b) has developed an interim method for assessing risks associated with adult exposures to lead in soil. USEPA's blood lead model for adults estimates blood lead levels resulting from exposure to lead at a Site as the sum of a baseline component and a Site-related component. The baseline component accounts for a non-Site-related (i.e., background) uptake of lead through diet, air, water, and soil/dust. The Site-related contribution to blood lead level is predicted by correlating Site-related uptake of lead from soil with blood lead level using a biokinetic slope factor (BKSF). The calculation of total blood lead level in an adult is calculated as follows (USEPA 1996b):

$$PbB_{adult,central} = PbB_{adult,O} + \frac{PbS \cdot BKSF \cdot IR_S \cdot AF_S \cdot EF_S}{AT} \qquad \textbf{Equation (6)}$$

where:

$PbB_{adult,central}$	=	central estimate of blood lead levels in adults exposed to Site soils (μg Pb/dL blood);
$PbB_{adult,O}$	=	typical or baseline blood lead level in adults in the absence of exposures to the Site (μg Pb/dL blood);
PbS	=	average Site soil lead concentration (mg/kg);
BKSF	=	biokinetic slope factor relating theoretical increase in typical adult blood lead level to average daily lead uptake (μg Pb/dL blood increase per μg Pb/day);
IR_S	=	ingestion rate of soil (g/day);
AF_S	=	gastrointestinal absorption fraction for lead ingested from soil (unitless);
EF_S	=	exposure frequency for contact with Site soils (days/year); and
AT	=	averaging time; the total period during which Site soil contact may occur (days/year).

The blood lead level calculated using the above empirical model, $PbB_{adult,central}$, represents a geometric mean corresponding to typical exposure patterns and typical lead concentrations in soil. Variations in blood lead level in the fetuses of an adult population (e.g., workers) exposed to lead are estimated by multiplying the calculated geometric mean blood lead level by an appropriate geometric standard deviation (GSD), as follows:

$$PbB_{fetal,0.95} = PbB_{adult,central} \cdot GSD^{z}_{adult} \cdot R_{fetal/maternal}$$ **Equation (7)**

where:

$PbB_{adult,095}$	=	95th percentile blood lead level among fetuses born to exposed workers, i.e., there is a 95 percent likelihood that a fetus born to an exposed worker would have a blood lead level no greater than $PbB_{adult,095}$ (μg Pb/dL blood);
$PbB_{adult,central}$	=	central estimate of blood lead levels in adults exposed to Site soils (μg Pb/dL blood);
GSD_{adult}	=	geometric standard deviation of blood lead in an adult population (unitless);
z	=	standard normal deviation used to calculate a specific percentile from a lognormal distribution of blood lead levels (unitless); and
$R_{fetal/maternal}$	=	theoretical constant of proportionality between fetal blood lead level at birth and maternal blood lead level (unitless).

Equation (7) can be refined to calculate the individual probability of a fetus population associated with a target blood lead level, by first calculating the z value and then looking up the percentile corresponding to the z value in a standard normal distribution table:

$$z\ value = \frac{\log(Target\ PbB_{fetus percentile}) - \log(PbB_{fetus,central} * R_{fetal/maternal})}{\log(GSD_{adult})}$$

Equation (8)

In the baseline risk assessment, USEPA's adult blood lead model is used to evaluate theoretical blood lead levels in potential fetuses of current and future female routine workers of child-bearing age, future female construction workers of child-bearing age, and current and future female trespassers (age 9 to 18) at the ACS Site, due to exposure to lead in on-Site soil.

USEPA (1996b) recommends that the adult blood lead model not be used for scenarios in which the exposure duration is less than 90 days, or for scenarios in which the exposure frequency is less than one day/week. Since the high-end exposure frequency for the excavation worker is assumed to be 10 days/year (see Section 3.4.9.2), the USEPA adult blood lead model is not used to assess the theoretical blood levels in the fetuses of this population.

The exposure parameters to be used in the adult blood lead model for the fetuses of workers and trespassers are the same as the default exposure parameters presented in USEPA (1996b) guidance, with the exception of the following Site-specific adjustments:

- Baseline blood lead level ($PbB_{adult,O}$): A geometric mean baseline blood lead level of 2.6 μg/dL is used for the workers (men and women). The value is derived from data for white males and females ages 17 to 65 from Phase 1 of the Third National Health and Nutritional Examination Survey (NHANES III). The baseline blood lead level for white males and females ages 17 to 65 is used since the ethnicity of the majority of the population in Griffith, Indiana, and the majority of the workforce at the ACS Site is white, and this age group is representative of the working years. A geometric mean baseline blood lead level of 1.7 μg/dL is used for the female workers of child-bearing age and female trespassers in order to predict theoretical blood lead levels in potential fetuses. This value is derived from data for white females ages 17 to 45 from Phase I of NHANES III. The baseline blood lead level of white females ages 17 to 45 is used since the majority of the population in Griffith, Indiana, and the majority of the workforce at the ACS Site is white, and this age group is representative of the child-bearing years. It should be noted that use of this value for female trespassers (age 9 to 18) may underestimate or overestimate blood lead levels in their fetuses. On the one hand, the NHANES value may overestimate teenage blood lead levels since the geometric mean blood lead level for white females between the ages of 12 and 19 is reported to be 1.0 μg/dL, based on Phase I of the NHANES III data (Brody et al. 1994). Conversely, radionuclide data supports an adolescent growth spurt during this age period, which may result in a shift of lead from blood to bone. Recently deposited bone lead would be readily mobilized during pregnancy, with direct transfer to the fetus.

- Soil Lead: Site soil lead concentrations for current scenarios were determined from samples 0 to 2 feet bgs. Because no samples were collected from 0 to 2 feet in Area 2, samples collected from 2-4 feet bgs were used to evaluate current scenarios. Samples collected from 0 to 10 feet bgs were used to evaluate future scenarios. In Areas 1, 4A, and 4B the lower of the 95th UCL of the lead concentrations or the maximum detected concentrations was used as soil lead concentration per the EPA's request. The maximum detected concentrations were used in Areas 2 and 3.

- Exposure Frequency (Ef_s): An exposure frequency of 219 days per year is used for the routine workers (men and women) and for female routine workers of child-bearing age, based on the typical Site-specific exposure frequency estimated for routine workers as described in Section 3.4.8.2. An exposure frequency of 196 days per year is used for the construction workers (men and women) and for female construction workers of child-bearing age. An exposure frequency of 12 days per year is used for the trespassers, based on the typical Site-specific exposure frequency estimated for trespassers as described in Section 3.4.11.2.
- Averaging Time (AT): An averaging time of 91 days is used for the trespassers, based on the typical Site-specific averaging time estimated for trespassers as described in Section 3.4.11.5.
- Ingestion Rate (Ir_s): A soil ingestion rate of 0.1 g/day (100 mg/day) is used for construction workers (men and women) and for female construction workers of child-bearing age, based on the typical soil ingestion rate of 100 mg/day for construction workers described in Section 3.4.10.1.

4.2.3 Route-to-Route Extrapolation

USEPA-derived dermal toxicity values are not available for any chemical. Therefore, a quantitative evaluation of cancer risk and noncancer effects for this route of exposure is not possible without performing independent evaluations of toxicity data in the open literature to derive toxicity values, or using toxicity values available for another route of exposure to approximate toxicity values for dermal exposure (USEPA 1989). Given the large number of chemicals evaluated at the ACS Site, this baseline risk assessment is based on a route-to-route extrapolation using available USEPA-derived toxicity values to allow a quantitative analysis of the dermal exposure pathways.

Oral toxicity values may be based on either administered or absorbed doses. USEPA (1989) recommends that oral toxicity values which are expressed as administered doses be adjusted to absorbed doses for evaluation of the dermal pathway. Such adjustment should be performed when "a scientifically defensible data base exists and demonstrates that the gastrointestinal absorption of the chemical in question, from a medium similar to the one employed in the critical study, is significantly less than 100%" (USEPA 1997b). USEPA (1997b) provides recommended gastrointestinal (GI) absorption values for several chemicals.

These values are used to calculate dermal toxicity factors where available. When chemical-specific absorption values are unavailable, oral toxicity criteria are used without adjustment to evaluate dermal exposures.

5.0 Risk Characterization

This section provides a characterization of the potential human health risks associated with the exposure scenarios evaluated in Section 3 using the toxicity values discussed in Section 4. For all contaminants except lead, the potential cancer risks and noncancer hazards are evaluated in Section 5.1. Potential exposures to lead are evaluated in Section 5.2. Uncertainties associated with the risk characterization are presented in Section 6.0.

5.1 Cancer Risks and Noncancer Hazards

Substances classified as potential carcinogens are assumed by USEPA to pose a cancer risk at all finite exposure levels. In characterizing cancer risks, therefore, a "no-threshold" assumption is generally applied by USEPA for all potentially carcinogenic substances. Although the "no-threshold" assumption may not apply for some classes of carcinogens that act through a mechanism that requires a threshold dose to be exceeded prior to initiation of the carcinogenic process, USEPA's "no-threshold" assumption is conservatively applied for all potential carcinogens in this baseline risk assessment. Actual risks may be less than those estimated using the "no-threshold" approach and USEPA toxicity values.

Given the "no threshold" assumption when evaluating substances classified as carcinogenic, USEPA characterizes cancer risk as the upper bound probability of developing cancer as a result of lifetime exposure to a substance. Thus, estimates of lifetime chronic daily intake (CDI) for each contaminant for each route of potential exposure are multiplied by the route-specific cancer slope factor (CSF) or unit risk factor (URF) for the contaminant to estimate hypothetical incremental lifetime cancer risk, as follows:

$$\textit{Cancer Risk} = CDI_{route} \cdot CSF_{route} \text{ or } CDI_{route} \cdot URF_{route} \qquad \textbf{Equation (11)}$$

Because of the "no-threshold" assumption, the potential cancer risk associated with exposure to a carcinogenic substance is zero only if the exposure is zero.

In evaluating the potential for adverse noncancer health effects, the USEPA generally relies on a hazard quotient approach. The hazard quotient (HQ) is the ratio of the calculated dose to the dose below which adverse effects are not anticipated. If the HQ is less than or equal to 1, it is assumed that there is little or no potential for deleterious effects as a result of the exposure. If the HQ exceeds 1, it is assumed that the potential exists for noncancer health effects to occur as a result of the exposure. It should be emphasized that an HQ value of greater than 1 does not indicate that adverse health effects are expected to occur, but rather that they have the potential to occur, and that a closer evaluation may be warranted.

To calculate an HQ value, the estimated daily intake for each contaminant for each route of potential exposure is divided by the route-specific noncancer reference dose (RfD) or reference concentration (RfC) for the contaminant, as follows:

$$Hazard\ Quotient = \frac{Intake_{route}}{RfD_{route}}\ or\ \frac{Intake_{route}}{RfC_{route}}$$

Equation (12)

The central tendency and RME estimates of intake that were used in calculating potential cancer risks and adverse noncancer hazards have been calculated using the central tendency and RME exposure factors presented in Section 3.3. These central tendency and RME estimates are presented separately for each media in Tables 5-1-1 through 5-1-132 for soil, 5-2-1 through 5-2-48 for sediment, 5-3-1 through 5-3-30 for surface water, and 5-4-1 through 5-4-84 for groundwater. Corresponding central tendency and RME estimates of potential cancer risks and HQ values are also presented in these tables.

The central tendency and RME estimates of cancer risk and HQ values have been calculated to account for the potential variables in the doses received across a potentially exposed population. Potential variables in susceptibility (i.e., toxicity) across the exposed population are addressed by using USEPA toxicity values in calculating both the central tendency and RME estimates. These USEPA toxicity values are developed using approaches which are intended to be protective of especially susceptible members of the general population, such as children. The toxicity values are thus considered to be conservative, i.e., more likely to overestimate than to underestimate risk.

For example, RfDs and RfCs typically incorporate an uncertainty factor of 10 to account for the presence of potentially susceptible individuals, while CSFs and URFs are based on the 95th upper confidence limit (UCL) of the estimated cancer potency.

Potential cancer risk and noncancer hazards associated with cumulative exposure to the combination of contaminants at each area are estimated using the equations below, as required by USEPA guidance (USEPA 1989):

$$Cancer\ Risk_{cumulative} = \Sigma Cancer\ Risk_i$$

Equation (13)

$$HI = \Sigma HQ_i$$

Equation (14)

where:

Cancer Risk $_{cumulative}$	=	cumulative cancer risk from all contaminants
Cancer Risk $_i$	=	cancer risk for the *i*th contaminant
HI	=	cumulative hazard index from all contaminants
HQ $_i$	=	hazard quotient for the *i*th contaminant

According to USEPA (1989, 1991b), the cumulative baseline cancer risk and hazard index (HI) for a Site should include all media and pathways that the RME exposure scenario indicates are appropriate to combine. However, according to USEPA guidance, RME cancer and noncancer risk estimates for more than one pathway should not be combined unless an individual is likely to consistently face the RME exposure via more than one pathway simultaneously. As a conservative measure, cumulative cancer risks and HI values have been calculated by summing across all exposure pathways under each scenario in this baseline risk assessment.

As discussed in USEPA (1989), "application of the hazard index equation to a number of compounds that are not expected to induce the same type of effects or that do not act by the same mechanism, although appropriate as a screening-level approach, could overestimate the potential for effects" (p.8-14). Thus, consistent with USEPA (1989) guidance, exposures to compounds are segregated by effect and mechanism of action in those instances where the HI value calculated by summary across all contaminants exceeds 1.0 in the risk assessment.

The central tendency and RME estimates of cancer risks and HIs for each potentially exposed population are presented by route of exposure and by Area in the Pathway-Specific Carcinogenic and Noncarcinogenic Risk Tables (i.e., Tables 5-1-1 through 5-1-132 for soil, 5-2-1 through 5-2-48 for sediment, 5-3-1 through 5-3-30 for surface water, and 5-4-1 through 5-4-84 for groundwater). The text discusses the RME estimates for each population evaluated and discusses the central tendency values only for populations whose RME estimate exceed USEPA action levels. Uncertainties associated with the risk characterization are discussed in Section 6.0. It should be emphasized that the current future groundwater exposures in on-Site and off-Site areas are based on the maximum concentrations since these exposures are point-source exposures.

According to EPA policy, the target total individual risk resulting from exposures at a Superfund site may range anywhere between 1E-06 and 1E-04 (USEPA, 1991b). Thus, remedial alternatives should be capable of reducing total potential carcinogenic risks to levels within this range for individual receptors. OSWER Directive 9355.0-30, issued on April 22, 1991, provides further insight into the acceptable risk range when it states: "Where the cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future land use is less than 10^{-4}, and the non-carcinogenic hazard quotient is less than 1, action generally is not warranted unless there are adverse environmental impacts. However, if MCLs or non-zero MCLGs are exceeded, action generally is warranted. A risk manager may also decide that a baseline risk level less than 10^{-4} is unacceptable due to site-specific reasons and that a remedial action is warranted. The upper boundary of the risk range is not a discrete line at 1×10^{-4}, although USEPA generally uses 1×10^{-4} in making risk management decisions. A specific risk estimate around 10^{-4} may be considered acceptable if justified based on site-specific conditions."

5.1.1 Current and Future Exposure Scenarios

The central tendency and RME cumulative cancer risks and noncancer HI's for all routes of exposure for each population by Area are presented in the Summary Risk Tables, Tables 6-1-1 through 6-1-25 for Area 1, 6-2-1 through 6-2-20 for Area 2, 6-3-1 through 6-3-10 for Area 3, 6-4-1 through 6-4-4 for Area 4A, 6-5-1 through 6-5-14 for Area 4B, 6-6-1 through 6-6-16 for Area 5A, 6-7-1 through 6-7-3 for Area 5B, 6-8-1 through 6-8-4 for Area 6, and 6-91 and 6-9-2 for site-wide groundwater. The Summary Risk Tables are given a new primary number (i.e., 6-) in order to more easily distinguish them from the Pathway Risk Tables (i.e., 5-). Finally, cumulative risks and HIs for each receptor in each area are given in Tables 7-1 through 7-4.

The subsequent subsections (i.e., 5.1.1.1 and 5.1.1.2) discuss the receptor population in each area with the highest cancer risk and HI. The media and the specific contaminant(s) contributing the most risk to this maximum receptor population is also identified. The cancer risks and HIs for all other receptor populations are presented in the aforementioned tables. Subsection 5.1.1.3 discusses the contaminants which contribute the bulk of the risk in each media by area. The specific location of these contaminants is also listed.

5.1.1.1 Current Exposures. The receptor population with the highest current risk in Area 1 is the utility worker with an RME risk of 2.7×10^{-2} (Tables 7-1, 6-1-1, 6-1-3, and 6-1-5) and a CT risk of 7.6×10^{-5} (Tables 7-2, 6-1-2, 6-1-4, and 6-1-6). This is primarily due to dermal contact with benzene, tetrachloroethene, and PCBs in soil (0-10'). The receptor population with the highest HI is once again the utility worker with an RME HI of 4,100 and a CT HI of 2,700 (Tables 7-1 and 7-2). This is primarily due to dermal contact with benzene in groundwater (upper aquifer) (Tables 6-1-5 and 6-1-6).

The receptor population with the highest risk in Area 2 is the utility worker with an RME risk of 1.6×10^{-1} (Tables 7-1 and 6-2-1) and a CT risk of 5.2×10^{-3} (Tables 7-2 and 6-2-2). This is primarily due to dermal contact with aroclor 1260 and aldrin in soil (2-10'). The receptor population with the highest HI is also the utility worker with an RME HI of 2,800 (Tables 7-1 and 6-2-1) and a CT HI of 430 (Tables 7-2 and 6-2-2). This is primarily due to dermal contact with aldrin, antimony, aroclor 1254, and cadmium in soil (2-10').

The receptor population with the highest current risk in Area 3 is the utility worker with an RME risk of 8.0×10^{-2} (Tables 7-1 and 6-3-1) and a CT risk of 2.6×10^{-3} (Tables 7-2 and 6-3-2). This is primarily due to dermal contact with aroclor 1242, aroclor 1248, benzene and tetrachloroethene in soil (0-10'). The receptor population with the highest HI is also the utility worker with an RME HI of 7,000 (Tables 7-1 and 6-3-1) and a CT HI of 1,100 (Tables 7-2 and 6-3-2). This is primarily due to dermal contact with antimony, aroclor 1254, cadmium, and tetrachloroethene in soil (0-10').

The receptor population with the highest risk in Area 4A is the trespasser with an RME risk of 1.6×10^{-5} (Tables 7-1, 6-4-1, and 6-4-3) and a CT risk of 2.4×10^{-7} (Tables 7-2, 6-4-2, and 6-4-4). This is primarily due to dermal contact with aroclors, arsenic, and benzo(a)pyrene in sediment. The receptor population with the highest HI is also the trespasser with an RME HI of 3.9 (Tables 7-1, 6-4-1, and 6-4-3) and a CT HI of 1 (Tables 7-2, 6-4-2, and 6-4-4). This is primarily due to dermal contact with aroclor 1254 in sediment.

The receptor population with the highest current risk in Area 4B is the trespasser with an RME risk of 1.7×10^{-5} (Tables 7-1, 6-5-11, and 6-5-13) and a CT risk of 2.7×10^{-7} (Tables 7-2, 6-5-12, and 6-5-14). This is primarily due to dermal contact with aroclor 1254 and arsenic in sediment. The receptor population with the highest HI is also the trespasser with an RME HI of 2.4 (Tables 7-1, 6-5-11, and 6-5-13) and a CT HI of 0.25 (Tables 7-2, 6-5-12, and 6-5-14). This is primarily due to dermal contact with aroclor 1254 and cadmium in sediment.

The receptor population with the highest risk in Area 5A is the resident with an RME excess lifetime cancer risk of 6.0×10^{-4} (Table 7-1) and a CT excess lifetime cancer risk of 7.6×10^{-5} (Table 7-2). This is primarily due to dermal contact with aroclor 1254, arsenic, and benzo(a)pyrene in soil (0-2') (Tables 6-6-1 through 6-6-16). The receptor population with the highest HI is the child resident with an RME HI of 540 (Tables 7-1, 6-6-1, and 6-6-5) and a CT HI of 96 (Tables 7-2, 6-6-2, and 6-6-5). This is primarily due to dermal contact with antimony, aroclor 1254, beryllium, iron and the inhalation of chloroform in soil (0-2').

There are no current receptor populations in Area 5B and thus no current risks were evaluated here.

The receptor population with the highest risk in Area 6 is the resident with an RME excess lifetime cancer risk of 5.2×10^{-5} (Tables 7-1 and 6-8-1) and a CT excess lifetime cancer risk of 7.6×10^{-6} (Tables 7-2 and 6-8-3). This is primarily due to ingestion of arsenic and benzo(a)pyrene in sediment. The receptor population with the highest HI is the child resident with an RME HI of 2.9 (Tables 7-1 and 6-8-1) and a CT HI of 1.3 (Tables 7-2 and 6-8-3). This is primarily due to the ingestion of arsenic, iron, and manganese and dermal contact with antimony, beryllium, and cadmium.

5.1.1.2 Future Exposures. Excluding exposure to lower aquifer groundwater (which is discussed in the last paragraph of this subsection), the receptor population with the highest future risk in Area 1 is the utility worker with an RME risk of 2.7×10^{-2} (Tables 7-3, 6-1-1, 6-1-3, and 6-1-5) and a CT risk of 7.6×10^{-5} (Tables 7-4, 6-1-2, 6-1-4, and 6-1-6). This is primarily due to dermal contact with benzene and tetrachloroethene in soil (0-10'). The receptor population with the highest HI is the construction worker with an RME HI of 6,700 (Tables 7-3, 6-1-15, 6-1-16, and 6-1-17). This is primarily due to dermal contact with benzene in upper aquifer groundwater.

Excluding exposure to lower aquifer groundwater, the receptor population with the highest risk in Area 2 is the utility worker with an RME risk of 1.6×10^{-1} (Tables 7-3 and 6-2-1) and a CT risk of 5.2×10^{-3} (Tables 7-4 and 6-2-2). This is primarily due to dermal contact with aroclor 1260, aldrin, and bis(2-chloroethyl)ether in soil (2-10'). The receptor population with the highest HI is the construction worker with an RME HI of 8,700 (Tables 7-3, 6-2-11, and 6-2-12). This is primarily due to dermal contact with acetone, antimony, benzene, cadmium, and tetrachloroethene and the inhalation of chloroform in soil (2-4').

Excluding exposure to lower aquifer groundwater, the receptor population with the highest risk in Area 3 is the utility worker with an RME risk of 8.0×10^{-2} (Tables 7-3 and 6-3-1) and a CT risk of 2.6×10^{-3} (Tables 7-4 and 6-3-2). This is primarily due to dermal contact with aroclor 1242 and tetrachloroethene in soil (0-10'). The receptor population with the highest HI is the construction worker with an RME HI of 9,300 (Tables 7-3 and 6-3-5). This is primarily due to dermal contact with antimony, cadmium, 4-methyl-2-pentanone and benzene in soil (0-10').

The receptor population with the highest future risk in Area 4A is the trespasser with an RME risk of 1.6×10^{-5} (Tables 7-3, 6-4-1, and 6-4-3) and a CT risk of 2.4×10^{-7} (Tables 7-4, 6-4-2, and 6-4-4). This is primarily due to dermal contact with aroclors, arsenic, and benzo(a)pyrene in sediment. The receptor population with the highest HI is also the trespasser with an RME HI of 3.9 (Tables 7-3, 6-4-1, and 6-4-3) and a CT HI of 1 (Tables 7-4, 6-4-2, and 6-4-4). This is primarily due to dermal contact with aroclor 1254 in sediment.

Excluding exposure to lower aquifer groundwater, the receptor population with the highest risk in Area 4B is the utility worker with an RME risk of 1.6×10^{-2} (Tables 7-3, 6-5-1, 6-5-3, and 6-5-5) and a CT risk of 5.6×10^{-5} (Tables 7-4, 6-5-2, 6-5-4, and 6-5-6). This is primarily due to dermal contact with aroclor 1248 and benzene in the upper aquifer. The receptor population with the highest HI is the construction worker with an RME HI of 4,300 (Tables 7-3, 6-5-7, and 6-5-8). This is primarily due to dermal contact with and inhalation of benzene in the upper aquifer groundwater.

The receptor population with the highest risk in Area 5A is the resident with an RME excess lifetime cancer risk of $6.8x10^{-4}$ (Table 7-3) and a CT excess lifetime cancer risk of $1.1x10^{-4}$ (Table 7-4). This is primarily due to dermal contact with aroclor 1254, arsenic, and benzo(a)pyrene in soil (0-2') (Tables 6-6-1 through 6-6-16). The receptor population with the highest HI is the child resident with an RME HI of 580 (Tables 7-3, 6-6-3, and 6-6-7) and a CT HI of 100 (Tables 7-4, 6-6-4, and 6-6-8). This is primarily due to dermal contact with antimony, aroclor 1254, beryllium, iron and the inhalation of chloroform in soil (0-2').

The receptor population with the highest future risk in Area 5B is the commercial worker (car wash) with an RME risk of $4.9x10^{-3}$ (Tables 7-3 and 6-7-1) and a CT risk of $8.2x10^{-4}$ (Tables 7-4 and 6-7-3). This is primarily due to inhalation of bis(2-chloroethyl)ether and benzene in lower aquifer groundwater. The receptor population with the highest HI is the construction worker with an RME HI of 420 (Tables 7-3 and 6-7-2). This is primarily due to dermal contact with and inhalation of benzene in the upper aquifer groundwater.

The receptor population with the highest risk in Area 6 is the resident with an RME excess lifetime cancer risk of $5.2x10^{-5}$ (Table 7-3) and a CT excess lifetime cancer risk of $7.6x10^{-6}$ (Table 7-4). This is primarily due to ingestion of arsenic and benzo(a)pyrene in sediment (Tables 6-8-1 through 6-8-4). The receptor population with the highest HI is the child resident with an RME HI of 2.9 (Tables 7-3 and 6-8-1) and a CT HI of 1.3 (Tables 7-4 and 6-8-3). This is primarily due to the ingestion of arsenic, iron, and manganese and dermal contact with antimony, beryllium, and cadmium.

In the event that the municipal water supply is supplemented or replaced by onsite (site-wide) wells in the future, the RME risk to onsite workers (routine and utility workers) is $2.6x10^{-1}$ (Tables 7-3 and 6-9-1) and the CT risk is $1.8x10^{-4}$ (Tables 7-4 and 6-9-2). This is primarily due to dermal contact with arsenic and bis(2-chloroethyl)ether in lower aquifer groundwater. The RME HI for the future onsite worker is 19 (Tables 7-3 and 6-9-1) and CT HI is 12 (Tables 7-4 and 6-9-2). This is primarily due to ingestion of arsenic, benzene, cadmium, chromium, iron, manganese, and zinc in lower aquifer groundwater.

5.1.1.3 Maximum Contaminant Locations. The central tendency and RME cancer risks and/or HIs for all populations exposed to soil in Areas 1, 2, 3 and 5A exceeded USEPA acceptable levels (i.e., $1x10^{-4}$ cancer risk and/or an HI of greater than 1). The primary risk-driving contaminants and their maximum locations (Figure 3) within in each Area are as follows:

- **Area 1 Surface and Subsurface Soil**

  Aroclor - 1242 (TP02-03)

  Aroclor - 1254 (TP02-03)

Benzene	(TP02-03)
Chloroform	(TP06-04)
Tetrachloroethene	(TP02-03)
Toluene	(TP02-03)
Trichloroethene	(SB92-03)
1,1,1-Trichloroethane	(TP07-03)
Antimony	(TP06-04)
Beryllium	(TP06-04)
Cadmium	(TP06-04)

- **Area 2 Surface and Subsurface Soil**

Acetone	(SA04-0)
Aldrin	(SB39-10)
Aroclor 1254	(T12-S and SB37-10)
Aroclor 1260	(SA02-S and SB78-07)
Chloroform	(SA04-0)
Tetrachloroethane	(SA04-0 and SA04-S)
Toluene	(SA04-0)
1,1,1-Trichloroethane	(SA04-0)
Antimony	(DS01-S)
Cadmium	(DS01-S)
Chromium	(DS01-S)

- **Area 3 Surface and Subsurface Soil**

Acetone	(SB30-10)
Aroclor 1242	(TP01-03_5)
Aroclor 1248	(SB48-01 and KP01-S)
Aroclor 1254	(SB48-01 and SB30-10)
Aroclor 1260	(SP02-S)
bis (2-ethylhexyl) phthalate	(SB30-10)
Benzene	(SB30-10)
Ethylbenzene	(SB30-10)
Tetrachloroethene	(SA02-03 and SB30-10)
Toluene	(SB30-10)
Trichloroethene	(SA02-03 and SB30-10)
4-methyl-2-pentanone	(SB30-10)
1,1,1-Trichloroethane	(SB30-10)

Antimony	(SA02-03 and SB30-10)
Barium	(SB30-10)
Cadmium	(SA02-03 and SB30-10)
Copper	(SB30-10)

- **Area 5A Surface Soil**

Aroclor 1254	(SS02-001)
Antimony	(SS02-01)

The central tendency and RME cancer risks and/or HIs for many of the populations exposed to sediment in Areas 4A, 4B, 5A, and 6 were less than USEPA acceptable levels (i.e., $1x10^{-4}$ cancer risk and/or an HI of greater than 1). Some of the exceptions were as follows:

- The exposure of future utility workers to Area 4B sediment had RME and CT HIs of 5.9 and 1.0, respectively, due primarily to dermal contact with aroclor-1254 at sampling location ST11-101.
- The exposure of future construction workers to Area 4B sediment had an RME HI of 8.0 due primarily to dermal contact with aroclor-1254 at sampling location ST11-101. The RME cancer risks were less than 1×10^{-5}.
- The exposure of current/future child residents to Area 6 sediment had RME and CT HIs of 2.9 and 1.3, respectively, due primarily to ingestion of arsenic and iron at sampling locations SD13-01 and SD14-01, respectively. The RME and CT cancer risks were less than 5×10^{-5}.

The central tendency and RME cancer risks and/or HIs for most populations exposed to surface water in Areas 1, 2, 4A, and 4B were less than $1x10^{-5}$ cancer risk and an HI of 1. One exception was the RME exposure of current/future trespassers (HI of 1.4) due to inhalation of benzene at SW-09. The RME and CT cancer risks and CT HI were below USEPA acceptable limits for this population.

The central tendency and RME cancer risks and/or HIs for all populations exposed to groundwater in the upper aquifer (on-site and off-site) and lower aquifer (on-site and off-site) exceeded USEPA acceptable levels (i.e., $1x10^{-4}$ cancer risk and/or an HI of greater than 1). The primary risk-driving contaminants and the location of their maximum concentration (Figure 4) within in each Area are as follows:

- **Upper Aquifer (On-Site)**

Aroclor 1248	(MW04)
Benzene	(MW03)

Ethylbenzene	(MW05)
Toluene	(MW03)

- **Upper Aquifer (Off-Site, Area 5A)**

Benzene	(MW06)
bis (2-ethylhexyl) phthalate	(MW06)
Di-n-octyl phthalate	(MW06)
ethyl benzene	(MW06)
pentachlorophenol	(MW06)
Xylene	(MW06)

- **Upper Aquifer (Off-Site, Area 5B)**

Benzene	(MW48)

- **Lower Aquifer (On-Site)**

Ammonia	(MW09)
Benzene	(MW09)
bis (2-chloroethyl) ether	(MW09)
bis (2-ethylhexyl) phthalate	(MW23)

- **Lower Aquifer (Off-Site, Private Wells)**

Chloroform	(PWC-01)

- **Lower Aquifer (Off-Site, Monitoring Wells)**

bis (2-ethylhexyl) phthalate	(MW36)

The off-site private wells in Area 5A are used to evaluate current risks to residents using the lower aquifer. The off-site monitoring wells in Area 5A are used to evaluate future risks to residents using the lower aquifer. The on-site lower aquifer wells were used to evaluate future risks to off-site commercial workers downgradient in Area 5B.

5.2 Blood Lead Levels

5.2.1 Child Blood Lead Levels

Version 0.99d of USEPA's IEUBK model is used in this assessment to evaluate blood lead levels in child residents in Areas 5A and 6 under both current and future exposure scenarios. The following Site-specific exposure concentrations were evaluated for use in the IEUBK model to assess potential exposures to lead in air, soil, and drinking water in Areas 5A and 6. USEPA guidance states that at least 95 percent of a modeled population should have blood lead concentrations of 10 μg/dL or less (USEPA 1994c).

- Air: The maximum estimated off-site air concentration under the current scenario in Area 5A is 0.0009 $\mu g/m^3$, based on emissions from on-site Areas during routine activities. The maximum estimated off-site air concentration under the future scenario in Area 5A is 0.04 $\mu g/m^3$, based on emissions from on-site Areas during construction activities (ENVIRON 1998). These estimated air concentrations are significantly lower than the default ambient air concentration of 0.1 $\mu g/m^3$ presented in the IEUBK model.

  The maximum estimated off-site air concentration under the current scenario in Area 6 is 0.0002 $\mu g/m^3$, based on emissions from on-site Areas during routine activities. The maximum estimated off-site air concentration under the future scenario in Area 6 is 0.01 $\mu g/m^3$, based on emissions from on-site Areas during construction activities (ENVIRON 1998). These estimated air concentrations are significantly lower than the default ambient air concentration of 0.1 $\mu g/m^3$ presented in the IEUBK model.

- Drinking Water: The estimated drinking water concentration for current exposures in Area 5A is 22.6 µg/L, based on the maximum lead concentration detected in residential private wells in Area 5A. This value is the maximum of water samples collected from PW-02 (also known as PW-D). It should be noted that the water sample collected from PW-07 contained a higher lead concentration (41.7 µg/L) than those detected in PW-02. However, PW-07 is a closed well at an industrial property where children are not expected to ingest the water.

  The estimated drinking water concentration for future exposures in Area 5A is 11.6 µg/L, based on the maximum lead concentration detected in lower aquifer monitoring wells in Area 5A (i.e., MW-28). Due to poor quality of the shallow aquifer, it is not evaluated for ingestion risk in this assessment. It should be noted that concentrations in both aquifers, on average, are below the Federal Action Level for lead in drinking water (15 µg/L).

  Due to the direction of groundwater flow, Site-related contaminants are not expected to be present in groundwater in Area 6.

- Soil: The average of the two residential soil samples collected in Area 5A is 64.8 mg/kg. This concentration is less than the default soil lead concentration of 200 mg/kg in the IEUBK model. Soil samples were not collected in Area 6. However, lead was detected in three sediment samples collected in Area 6. The average lead concentration in sediment in Area 6 is 71.3 mg/kg. This concentration is less than the default soil lead concentration of 200 mg/kg presented in the IEUBK model.

Under the current exposure scenario in Area 5A, USEPA default exposure parameters (including an air concentration of 0.1 μg/m^3 and a soil concentration of 200 mg/kg) are conservatively used in the IEUBK model, with the exception of drinking water concentrations. The results of the IEUBK model for current exposures in Area 5A is depicted in Figure 5. Based on the results of the IEUBK modeling, the probability that children that are exposed to an average drinking water concentration of 22.6 μg/L from a residential well would have blood lead levels greater than 10 μg/dL is 6.84 percent. Thus, less than 95 percent of the children are calculated to have blood lead levels less than USEPA's blood lead level of concern from children (10 μg/dL), based on the maximum lead concentration in residential wells.

For the future exposure scenario in Area 5A, USEPA default exposure parameters (including an air concentration of 0.1 μg/m^3 and a soil concentration of 200 mg/kg) are conservatively used in the IEUBK model, with the exception of drinking water concentrations. The results of the IEUBK model for future exposures in Area 5A is depicted in Figure 6. Based on the results of the IEUBK modeling, the probability that children are exposed to an average drinking water concentration of 11.6 μg/L from the lower aquifer would have blood lead levels greater than 10 μg/dL is 3.24 percent. Thus, at least 95 percent of the children are calculated to have blood lead levels less than USEPA's blood lead level of concern for children (10 μg/dL), based on measured lead concentrations in the lower aquifer off-site.

For Area 6, the only potential routes of exposure to lead from the Site is via air emissions or contact with sediment. As noted above, air concentrations for current and future exposures in Area 6 are less than the default ambient air concentration of 0.1 μg/m^3 presented in the IEUBK model. In addition, the estimated sediment concentration is less than the default soil lead concentration presented in the IEUBK model. Thus, increased blood lead levels in children due to inhalation of ambient air or contact with sediment in Area 6 are not expected.

5.2.2 Adult/Fetal Blood Lead Levels

USEPA's (1996b) adult blood lead model is used to evaluate the potential for increased blood lead levels in the fetuses of current and future routine workers, future construction workers, and future trespassers exposed to surface soil at the ACS Site. The blood lead level calculated for adults using the method described in Section 4.2.2.2 is intended to represent a geometric mean corresponding to typical exposure patterns and typical lead concentrations in the environmental media contacted at a Site. As described in Section 4.2.2.2, variations in fetal blood lead level within an adult child-bearing population (i.e., female workers) are then estimated by multiplying the calculated geometric mean with an appropriate geometric standard deviation (GSD). The individual probability of the fetuses of an exposed adult population expected to exceed a target blood lead level (i.e., 10 μg/dL) was calculated by solving for the z value and then looking up the percentile corresponding to the z value in a standard normal distribution table.

Table 6-9-1 shows the individual probability of the fetuses of current and future workers, future construction workers, and future trespassers exposed to Site soils which are expected to exceed the target blood lead level.

5.2.2.1 Probability of Fetal Blood Lead Levels Exceeding Target Blood Lead Level.

Current USEPA Office of Solid Waste and Emergency Response (OSWER) guidance calls for the establishment of cleanup goals so that a typical child or group of children with similar exposure would have an estimated risk of no more than 5 percent exceeding a blood lead level of 10 μg/dL (USEPA 1994c, 1996b). USEPA (1996b) guidance recommends applying a similar 95th percentile goal to the protection of fetuses carried by women who experience nonresidential exposure. As shown in Table 6-9-1, there is a less than 1% chance that fetuses of female routine workers of child-bearing age exposed to site soil in Area 1 and 4B will exceed the blood lead level of 10 μg/dL. However there is a 75% and a 93% chance that the fetuses of female routine workers of child-bearing age exposed to site soil in Areas 2 and 3, respectively will exceed the blood lead level of 10 μg/dL level. Over 98% of the fetuses of female construction workers of child-bearing age in Areas 2 and 3 and 13% in Area 1 are expected to exceed the blood lead level of 10 μg/dL. None of the fetuses of female construction workers of child-bearing age in Area 4B are expected to exceed the blood lead level of 10 μg/dL. Less than 1% of the fetuses of female trespassers in Areas 1, 4A and 4B are expected to exceed the blood lead level of 10 μg/dL. However, 6% of the fetuses of female trespassers exposed to subsurface soil (0-10') in Area 3 are expected to exceed the blood lead level of 10 μg/dL. The fetuses of female trespassers exposed to surface and subsurface soils in area 2 have less than a 5% probability of exceeding the 10 μg/dL blood lead level.

5.3 Buried Drums

Hazardous waste-containing drums were buried in Areas 1, 2, and 3. In Area 1, the drum landfill area consists of two oval areas spanning approximately 250 feet north to south and 450 feet west to east, located in the northern third of the fenced ACS facility. An estimated 400 to 2,500 drums containing sludge and semi-solids of unknown types are buried in this area on their sides and closely packed together (Warzyn, Inc. 1991a; Focus Environmental 1997; Geophysical Study

(1998)). The surface throughout this area is generally flat, with no vegetation or surface construction, and covered by coarse sand and gravel. The drums are located approximately one to five feet below ground surface. The Remedial Investigation report (Warzyn, Inc. 1991a) noted that the majority of drums encountered during Site Investigation were dented, corroded, and/or mangled. Analytical results from Area 1 soil and groundwater samples indicate that releases from the drums have already resulted in the presence of contaminants in the subsurface environment.

Because the drum landfill in Area 1 is located within the fence of the active ACS facility, it has been hypothesized that the pressure on the buried drums from vehicular traffic could result in an additional release of drummed waste to soil, groundwater, soil gas, and ultimately ambient air. This release could then contribute to acute chemical/physical exposures and explosive hazards. It is not possible to quantify the effect of such releases, because drum contents from Area 1 have not been sampled. Due to the shallow depth to groundwater (i.e., approximately two feet below ground surface), any additional waste released from the drums is likely to be below the groundwater table. As such, if drum damage were to occur from truck traffic, releases could potentially increase the total amount of waste present in subsurface soil and groundwater, and are likely to cause a sudden increase in air concentrations that could pose an acute risk to workers. Additional investigation may be required in this area to determine the actual risk to workers and/or visitors.

Areas 2 and 3 also contain buried waste and drums that have never been fully characterized. During a site visit in 1998, BVSPC noted that the protective clay cap over Area 2 had eroded in many areas, allowing drums to be exposed (BVSPC 1998a). While Areas 2 and 3 are not within the active facility; a risk of acute exposure or explosion from vehicular puncture of these drums does exist anytime vehicles are in these areas. In order to quantitatively estimate the risk associated with these exposures in these areas, further investigation would be required.

6.0 Uncertainty Analysis

Risk is a function of exposure and toxicity. Therefore, uncertainties in estimating either exposure or toxicity can lead to uncertainties in evaluating potential risks. As discussed, conservative assumptions and approaches have been systematically applied in the risk assessment to address uncertainties. Use of these conservative assumptions and approaches means that risks are likely to be overestimated rather than underestimated in this RA. Several key sources of uncertainty in the risk estimates are described in the following sections.

6.1 Site Characterization

Chemical concentrations in soil, groundwater, surface water, sediment, and air are generally heterogeneous, with concentrations varying from one location to another, and over time.

In the attempt to conservatively estimate the true mean of each exposure medium, the 95% upper confidence limit (UCL) of the arithmetic mean for each contaminant (or the maximum measured concentration, whichever is lower), was used to estimate exposures. These estimated exposure concentrations may overestimate or underestimate risks for the following reasons (ENVIRON 1998):

- It is not possible to guarantee that the highest concentration at a Site will be detected during any sampling event. However, targeted sampling conducted at the Site has generally focused on identifying areas of contamination, rather than specifically characterizing areas of exposure. For example, many of the soil samples selected for analysis were those with the highest contamination based on visual observation and total organic vapor readings. Therefore, the exposure concentrations used in the risk assessment may be higher than the actual average concentrations.
- The use of the 95 UCL may, in some cases, underestimate the actual risk to a specific receptor. For example, the case of a receptor whose activities do not result in an equal opportunity for exposure with every part of the site, but instead has repeated exposure with a small part of the site where maximum contaminant concentrations are present. The use of an estimate of the mean contaminant concentration (e.g., 95 UCL) would underestimate the risk to this receptor.
- Contaminant concentrations in various media are assumed to remain constant over time, which could underestimate or overestimate risks by not accounting for degradation. Site contaminants may degrade to chemicals with more or less toxicity. For example, some chlorinated solvents found at the Site (e.g., tetrachloroethene,

trichloroethene, dichloroethene) may degrade to vinyl chloride, which may be more hazardous than the parent compounds. However, the most frequently detected solvent, benzene, would degrade to less toxic substances such as carbon dioxide and water. Sampling and analysis were performed in soil, groundwater, sediment, and surface water at the ACS Site for common degradation products, such as vinyl chloride. These degradation products have been included in the risk assessment.

- Vinyl chloride has the potential to migrate from landfills through soil gas into indoor residential basements. Vinyl chloride has been detected in two off-site upper aquifer monitoring wells, one north of the Site at a concentration below the MCL (in MW-39), and one just southeast of the Site at concentrations at or just above the MCL (in MW-6). The soil gas migration of vinyl chloride or other volatiles has not been evaluated at the ACS site. This is a potential source of risk and is an additional reason why volatiles in the upper aquifer should be contained onsite.
- Contaminant concentrations in various media are assumed to remain constant over time, which could overestimate risks by not accounting for source depletion. The assumption of steady-state conditions could also underestimate exposure concentrations by not accounting for future release of unmitigated source materials, if such a release is significantly greater than those that have occurred over the past three decades at the Site. Intact buried drums on-site that still contain waste material are a potential source at the Site. As these drums degrade, or are disturbed during potential excavation activities, the waste material may be released to the environment. An attempt was made in Area 2 to puncture or crush the 35,000 to 50,000 drums prior to burial. These drums, having been buried for 20 to 40 years, are now in various states of corrosion. This would suggest that contaminant concentrations in soil and groundwater may already represent the impact of the drums as a source (i.e., exposure concentrations are not likely to be higher in the future than the concentrations measured to date). However, past USEPA observations suggest the possibility that some intact drums, full of waste solvents, may have yet to release their contents. Therefore, further sampling is needed to fully characterize the risks in Area 2.

Drums in Area 1 are also in varying states of degradation. However, since many of these drums were not intentionally breached prior to disposal, a potentially greater fraction of the drums in Area 1 may still hold waste material that could be released in the future. Thus, chemical concentrations in soil and groundwater in Area 1 could conceivably increase in the future as a result of continuing release from drums in that Area (ENVIRON 1998).

6.2 Tentatively Identified Compounds

Organic compounds are initially identified in analyses by gas chromatography-mass spectroscopy (GC/MS) via computerized searching of the sample mass spectrum against compound libraries through retention time and retention index matching (EPA, 1990). Tentatively identified compounds (TIC) are those organic analytes that are not treated as target compounds when the identification of the analyte is based on this computerized search. The confidence in identification of the analyte is uncertain; however, can be increased by reanalyzing the sample using the corresponding standard to calibrate the equipment. When reanalysis does not occur, as indicated by the ACS site data, the identity of the TIC remains uncertain and the concentration can only be estimated.

Over 600 TICs were detected in the organic fraction of the soil, groundwater, sediment, and surface water samples collected at the ACS site. Many of the compounds that appear as TICs belong to common organic compound classes. The most frequently detected TICs in soil and surface water were in the hydrocarbon and aromatic hydrocarbon compound classes. The most frequently detected TICs in groundwater were in the ether compound class. The most frequently detected TICs in sediment belong to the phenol and hydrocarbon compound classes. Additional TICs detected in the samples belong to the aldehyde and alcohol compound classes.

Although over 600 TICs were detected at the ACS site, the risk associated with exposure to the large number of compounds could not be calculated. Critical toxicity values necessary to calculate risk from exposure to the compounds were not available for any of the TICs, except for the following 13 analytes: acetaldehyde, acetophenone, azobenzene, 1-butanol, caprolactam, chlorodifluoromethane, cyclohexanone, diethylether, 1,4-dioxane, 2-(2-butoxyethoxy)ethanol, hexane, 4,4'-(1-methylethylidiene)phenol, and phthalic anhydride.

Because quantitative estimates for only 13 TICs were included in the HHRA, high levels of uncertainty remains relative to the risk associated with the over 600 contaminants. The samples were not reanalyzed using the corresponding standards and the identities and concentrations of the TICs are uncertain. Therefore, because of this minimal evaluation that was performed for the TICs detected at the ACS site, it cannot be determined whether the presence of these 600 plus contaminants would pose a significant risk to receptors if exposure were to occur either singly or in combination with the multitude of other contaminants at the ACS site.

6.3 Exposure Scenarios and Behavior Patterns

Scenarios of human exposure were evaluated without attempting to quantify the likelihood with which those scenarios may occur. For example, the likelihood of construction on the off-site Containment Area landfill (Area 2) is not known, and has not been accounted for in the calculation of potential health risks (i.e., the risks were calculated assuming that such construction will occur). In addition, the behavioral patterns of workers, trespassers, and residents also cannot be predicted with certainty. Section 3.4 identifies assumptions that are applied to characterize behavior (e.g., exposure frequencies) and physical traits (e.g., body weight). RME, as well as central tendency estimates were evaluated to help characterize the uncertainty and variability among potential receptors and their behavior. There is only a small probability that any individual would experience RME exposures, but, consistent with USEPA guidance, these values are evaluated in order to be adequately conservative.

Blood lead concentrations may be underestimated in this risk assessment due to the limitations of the models used. These models do not account for Pica behavior (high end exposure of individuals documented to eat soil). In addition, the model is based upon total soil lead concentrations. Soil lead concentrations have been shown to increase in the fine fraction (i.e., less than 250 microns). This fine fraction is the portion which would stick to hands and be available for incidental ingestion. The ingested soil lead concentration (concentration in the fine fraction) is likely to be 2 to 3 times greater than the total soil led concentration. The increase in lead concentrations available for human incidental ingestion is not accounted for in this risk assessment.

6.3.1 Exposure to Maximum Soil Concentrations. The exposure activity patterns of the receptor populations cannot be known with certainty. Biased exposures can occur because of non-random activity patterns. If there is a feature at the Site that draws receptors to a particular location in an area, and that location happens to have higher concentrations than the rest of the area, then exposures could be greater than those estimated using the upper confidence limit on the mean of concentrations throughout an area. Concentrations at the Site are very heterogeneous, with the highest concentrations of a given chemical and nondetected concentrations of the same chemical within several feet of each other.

6.3.2 Dermal Soil Loading and Fraction Absorbed

Risks and hazard indices were calculated for dermal exposures to soil/sediment for all receptors using dermal adherence values recommended by USEPA's Dermal Exposure Assessment Guidance (USEPA 1992f), the only promulgated USEPA guidance for dermal assessment. Other adherence values found in USEPA's *Region 9 Preliminary Remediation Goals (PRGs) 1998* (USEPA 1998c) and presented in the USEPA Interim Guidance *Dermal Risk Assessment* (USEPA 1998d) were not used, but are presented here for comparative value. The interim adherence values were not used because they have not been approved for use in risk assessment. Adherence values estimate the amount of soil that will adhere to a given surface area of skin. The 1998 adherence values are based on several recent studies in the literature (Kissel et al. 1996a, 1996b) and are lower than adherence values recommended in USEPA guidance (USEPA 1992f):

Comparison of Dermal Adherence Values		
Receptor	**USEPA (1992f)**	**USEPA (1998c, 1998d)**
Adult	1.0 (RME). 0.2 (central)	0.08
Child	1.0 (RME). 0.2 (central)	0.3

The current *Exposure Factors Handbook* (USEPA 1997c) indicates that confidence in the USEPA (1992f) adherence factors is low. USEPA (1997c) cites Kissel et al. studies (1996a 1996b) as more recent studies for estimation of dermal adherence, although the overall rating of these studies is also low (due to the limited dataset and differing exposure settings, e.g., some participants wore gloves and others didn't). The Kissel data indicate that there is high variability in soil adherence depending on several factors including the activity of the receptor, soil type, and soil moisture content.

The percentage of chemical in soil that is absorbed through the skin (i.e., the fraction absorbed) is influenced by the amount of soil that adheres to the skin. USEPA (1992f) notes that the fraction absorbed is likely to be greatest when the amount of soil on the skin is a "monolayer" (defined as a single layer of tightly packed particles). When soil adherence on the skin is greater than a monolayer, the fraction absorbed decreases as the thickness of the soil layer on the skin increases because soil particles are not in contact with the skin. Thus, absorption through the skin is expected to decrease at high levels of soil adherence. The fraction absorbed also decreases when soil adherence is low enough that the skin is not completely covered with soil particles. The potential sensitivity of the fraction absorbed to soil adherence is of particular concern with the significant uncertainty in soil adherence values.

6.4 Toxicological Information

Toxicity data used in risk assessment is limited. Much of the USEPA data used to generate health criteria are derived from animal studies. The following uncertainties result from the USEPA toxicological database:

- Both end-points of toxicity (effect or target organ) and the doses at which effects are observed are extrapolated from animals to humans
- Results of short-term exposure studies are used to predict the effects of long-term exposures
- Results of studies using high doses are used to predict effects from exposures to low doses typically associated with environmental exposures
- Effects exhibited by homogeneous populations of animals (or humans) are used to predict effects in heterogeneous populations with variable sensitivities
- Current toxicity values are based upon adult exposures and have not been evaluated for their protectiveness to children or the developing fetus

In evaluating the potential for noncancer hazards, USEPA attempts to account for these sources of uncertainty by using a conservative approach to develop toxicity values. First, the highest dose that caused no adverse effect in the study animals (NOAEL) (or the lowest dose that caused an adverse effect, LOAEL, if no NOAEL is available) is selected. This dose is then divided by one or more uncertainty factors. For example, an uncertainty factor of ten is typically applied to account for each of the following: (1) use of a LOAEL instead of a NOAEL; (2) estimation of long-term effects from a short-term study; (3) extrapolation from animals to humans; and (4) variability among individual humans, so that the RfD or RfC will be protective of sensitive individuals in the general population. Finally, a modifying factor of up to ten is sometimes applied to USEPA. Thus the RfD or RfC can be up to 1,000 times lower than a dose which caused no effect in animals, and up to 10,000 times lower than the lowest dose shown to have an adverse effect.

In evaluating the potential for cancer, current methodology assumes that there is no threshold dose below which the risk of developing cancer is zero. Therefore, mathematical models (e.g., the linearized multi-stage low-dose extrapolation model) are use to estimate the risks associated with very low doses. The data are fit to the model and the upper 95 percent confidence limit of the slope is calculated, i.e., the slope factor; thus, there is only a 5 percent chance that the probability of response could be greater. The true value of cancer risk of these chemicals is uncertain; it is unlikely to be lower than the values estimated.

6.4.1 Extrapolated Dermal Toxicity Values

As noted in Section 4, USEPA has not established any toxicity values for evaluating risks or hazards via the dermal route. The extrapolation of toxicity values from one route to another introduces significant uncertainties because the toxicity of a chemical may differ from one route of exposure to another. Use of oral toxicity values to estimate dermal risks could overestimate risks if the mechanism of oral toxicity for a chemical were influenced by first-pass metabolism in the intestine and liver (e.g., when toxicity is caused by metabolites of the contaminant). Chemicals absorbed through the skin are distributed through the body without undergoing this presystemic transformation to the more toxic metabolite. Use of oral toxicity values to estimate dermal risks could also underestimate risks if oral absorption in the toxicity study were significantly less than 100%, and the oral toxicity value did not account for oral absorption. In addition, chemicals such as PCBs may cause the toxic effect at the point of contact rather than (or in addition to) effects on internal organs after being absorbed through the skin. For chemicals that act in this manner, combination of a dermal absorption fraction with the estimated toxicity value may underestimate risks to the skin itself.

6.5 Cumulative Risks

The summation of cancer risks and noncancer hazards for multiple contaminants is based on dose additivity, which assumes that there are no synergistic or antagonistic interactions among the contaminants in a mixture and that each contaminant has the same mode of action and elicits the same health-effects (USEPA 1989). The cumulative estimates are considered screening-level estimates because they tend to overestimate cumulative cancer risks and noncancer hazards.

For example, the estimate of cumulative cancer risk is a sum of upper bound estimates of cancer risk, which are calculated with slope factors representing upper 95% confidence bounds of cancer potency. Contaminants with lesser evidence of human carcinogenicity are treated the same as contaminants with greater evidence (i.e., USEPA weight-of-evidence Groups B and C carcinogens are given the same weight as Group A carcinogens). Group C carcinogens contributed less than 2 percent of the total cancer risk. Similarly, contaminants with RfDs of lower confidence (i.e., larger uncertainty factors) are treated the same as contaminants with RfDs of higher confidence. The estimates of HIs presented in this baseline risk assessment include contaminants that may induce different health effects or that may act by different mechanisms.

7.0 References

American Cancer Society. 1997. *Cancer Facts & Figures - 1997.* Atlanta, GA.

American Chemical Service, Inc. (ACS). 1994. *Declaration of Land Use Restriction of Real Property.* January 14.

American Chemical Service, Inc. (ACS). 1997. *Site Safety and Health Plan.* January.

Black & Veatch Special Projects Corporation (BVSPC). 1997a. Letter from S. Mrkvicka of BVSPC to S. Bianchi of USEPA Region 5 regarding the fire pond soil analytical results. January 20.

Black & Veatch Special Projects Corporation (BVSPC). 1997b Letter from S. Mrkvicka of BVSPC to S. Bianchi of USEPA Region 5 regarding the results of the December 1996 outfall surface water sample. February 26.

Black & Veatch Special Projects Corporation (BVSPC). 1997c Transmittal from S. Mrkvicka of BVSPC to S. Bianchi of USEPA Region 5 of the analytical data comparison of the March 1997 groundwater sampling results. July 8.

Black & Veatch Special Projects Corporation (BVSPC). 1997d Facsimile from S. Mrkvicka of BVSPC to S. Bianchi of USEPA Region 5 regarding the surface water sample collected on April 1, 1997 along the driveway. August 12.

Black & Veatch Special Projects Corporation (BVSPC). 1997e E-mail transmittals from D. Pehrman of BVSPC to K. Edelmann of ENVIRON regarding September 1997 soil and sediment samples. October-December.

Black & Veatch Special Projects Corporation (BVSPC). 1998a ACS field site visit performed by Steve Mrkvicka, Eric Holder, and Chris Beetham. August 15, 1998.

Black & Veatch Special Projects Corporation (BVSPC). 1998b Facsimile from S. Mrkvicka of BVSPC to K. Edelmann of ENVIRON regarding ATMW-4D data from 4/97 sampling event. July 20.

Brody, D.J., MPH; J.L. Pirkle, MD, PhD; R.A. Kramer, ScD; K.M. Flegal, PhD, MPH; T.D. Matte, MD, MPH; E.W. Gunter; D.C. Paschal, PhD. 1994. Blood lead levels in the US population, Phase 1 of the Third National Health and Nutrition Examination Survey (NHANES III, 1988 to 1991). *JAMA* 272(4):277-283.

Calabrese, E.J., E.J. Stanek, III, C.E. Gilbert, and R.M. Barnes. 1990. Preliminary adult soil ingestion estimates: results of a pilot study. *Regulatory Toxicology and Pharmacology* 12:88-95.

Centers for Disease Control (CDC). 1991. *Preventing Lead Poisoning in Young Children.* Atlanta, GA: CDC, U.S. Department of Health and Human Services. October.

CSX Transportation, Inc. 1994. *Declaration of Land Use Restriction of Real Property.* March 4.

Djurovic, Z. And N. Djurovic. 1996. *Declaration of Land Use Restriction of Real Property.* December 4.

ENVIRON. 1997a. Personal communication between K. Edelmann of ENVIRON and the Building Commissioner of Griffith, Indiana. June 18.

ENVIRON. 1997b. Personal communication between K. Edelmann of ENVIRON and the NIRPC Services Coordinator. June 17.

ENVIRON. 1997c. Personal communication between D. Arsnow of ENVIRON and the Wellhead Protection Hydrogeologist of the Indiana Department of Environmental Management (IDEM). June 23.

ENVIRON. 1998. *Revised Baseline Risk Assessment, American Chemical Service NPL Site Volume I: Base-Case Risk Estimates.* September 1998.

Federal Emergency Management Agency (FEMA). 1982. Flood Insurance Rate Map: Town of Griffith, Indiana (Community-Panel number 185175). October.

Focus Environmental. 1997. Pre-Treatment/Materials Handling Study Report. October.

Gilbert, R.O. 1987. *Statistical Methods for Environmental Pollution Monitoring.* Van Nostrand Reinhold: New York.

Hawley, J.K. 1985. Assessment of health risk from exposure to contaminated soil. *Risk Analysis* 5:289.

Henderson, T. 1994. *Geochemical Reduction of Hexavalent Chromium in the Trinity Sand Aquifer*: Ground Water, Vol. 32, No. 3, May-June 1994.

Historic Landmarks Foundation of Indiana. 1996. Indiana Historic Site and Structures Inventory: Lake County interim Report. May.

Kissel, J, K. Richter, R. Duff, R. Fenske. 1996a. Factors affecting soil adherence to skin in hand-press trials. *Bull. Environ. Contamin. Toxicol.* 56:722-728.

Kissel, J, K. Richter, R. Duff, R. Fenske. 1996b. Field measurements of dermal soil loading attributable to various activities: Implications for exposure assessment. *Risk Anal.* 16(1):116-125.

Indiana State Library. 1997. Facsimile from Sylvia of the Indiana State Library to D. Arsnow of ENVIRON containing population and housing unit data for the state of Indiana for 1970, 1980 and 1990 from the U.S. Census. Fax No. 317/232-3728. June 12.

Indiana University School of Business (IUSB). 1997. Indiana County Profiles: Status of Indiana families Profile 1996 - Lake County. Http://www.iupui.edu/it/ibrc/profiles/sift/page1/ co45.pg1.pdf.

Jury, W.A., D. Russo, G. Streile, and H.E. Abd. 1990. Evaluation of volatilization by organic chemicals residing below the soil surface. *Water Resources Research* 26(1): 13-20.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: The indoor inhalation pathway. *Environ. Sci. Technol* 21(12):1194-1201.

Montgomery Watson. 1995. *Pre-Design Work Plan American Chemical Service, Inc. NPL Site, Griffith, Indiana.* Prepared for: ACS RD/RA Executive Committee. August.

Montgomery Watson. 1996a. *Technical Memorandum Dewatering/Barrier Wall Alignment Investigation Report, American Chemical Service, Inc. NPL Site, Griffith, Indiana.* Prepared for: ACS RD/RA Executive Committee. March.

Montgomery Watson. 1996b. *Technical Memorandum Wetland Investigation. American Chemical Service, Inc. NPL Site, Griffith, Indiana.* July.

Montgomery Watson. 1996c. *Technical Memorandum Upper Aquifer Investigation Monitoring Well and Sampling Proposal. American Chemical Service, Inc. NPL Site, Griffith, Indiana.* March.

Montgomery Watson. 1997a. *Technical Memorandum, 1996 Groundwater Sampling Results Report, American Chemical Service, Inc. NPL Site, Griffith, Indiana.* Prepared for ACS RD/RA Executive Committee. January.

Montgomery Watson. 1997b. *Technical Memorandum Phase II Wetland Investigation. American Chemical Service, Inc. NPL Site, Griffith, Indiana.* DRAFT. Prepared for ACS RD/RA Executive Committee. February.

Montgomery Watson. 1997c. *Technical Memorandum, March 1997 Groundwater Sampling Results Report, American Chemical Service, Inc. NPL Site, Griffith, Indiana.* Prepared for ACS RD/RA Executive Committee. January.

Montgomery Watson. 1997d. *Final Technical Memorandum Upper Aquifer Investigation (Phase II) Well Installation and Sampling, American Chemical Service, Inc. NPL Site, Griffith, Indiana.* Prepared for ACS RD/RA Executive Committee. July.

Montgomery Watson. 1997e. *Final Technical Memorandum Lower Aquifer Investigation Report, American Chemical Service, Inc. NPL Site, Griffith, Indiana.* Prepared for ACS RD/RA Executive Committee. July.

Montgomery Watson. 1997f. Technical Memorandum: June 1997 Groundwater Sampling Results Report. American Chemical Service, Inc. NPL Site, Griffith, Indiana. Prepared for ACS RD/RA Executive Committee. October.

Montgomery Watson. 1998a. Technical Memorandum: September 1997 Groundwater Monitoring Plan. American Chemical Service, Inc. NPL Site, Griffith, Indiana. Prepared for ACS RD/RA Executive Committee. January.

Montgomery Watson. 1998b. Technical Memorandum: December 1997 Groundwater Sampling Results Report. American Chemical Service, Inc. NPL Site, Griffith, Indiana. Prepared for ACS RD/RA Executive Committee. October.

National Climatic Data Center (NCDC). 1997. Surface meteorological data for Sound Bend, Indiana (Station 14848) for the years 1984 through 1992. Downloaded from Internet address: http:/www.epa.gov/scram001/t25.htm#surface.

National Oceanic and Atmospheric Administration (NOAA). 1993. *Comparative climatic data for the United States through 1993.*

Northern Indiana Public Service Company (NIPSC). 1992. *Community Analysis, Griffith, Indiana.* May.

Sargent, C.A. 1997. *EC-208: Answers to Your Questions About Planning and Zoning in Indiana.* Cooperative Extension Service, Purdue University.

Torrenga Engineering. 1992. Zoning District Map: Town of Griffith, Indiana. Adopted by the Board of Trustees of the Town of Griffith, Indiana, April 3, 1979; revised February 7, 1992.

United States Department of the Interior, Fish and Wildlife Service. 1981. National Wetlands Inventory Maps for Highland and St. John Quadrangles. November. (Provided by the Lake County Soil and Water Conservation District, June 6, 1997).

United States Department of Labor (USDOL). 1994. Occupational Health and Safety Administration (OSHA). Lead exposure in construction, Interim Final Rule. *58 Fed. Reg.* 26590. (29 CFR Part 1926.62).

U.S. Environmental Protection Agency (USEPA). 1989a. Office of Emergency and Remedial Response. *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A).* Washington, D.C. EPA/540-1-89-002. December.

U.S. Environmental Protection Agency (USEPA). 1989b. Seminar Publication, Transport and Fate of Contaminants in the Subsurface, EPA/625/4-89/019.

U.S. Environmental Protection Agency (USEPA). 1990b. *40 CFR Part 300, National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule.* March 8.

U.S. Environmental Protection Agency (USEPA). 1991a. *Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors."* Memorandum from T. Fields, Jr., Office of Emergency Remedial Response to B. Diamond, Office of Waste Programs Enforcement. OSWER Directive 9285.6-03. March 25.

U.S. Environmental Protection Agency (USEPA). 1991b. Role of the baseline risk assessment in Superfund remedy selection decisions. Memorandum from Don R. Clay to Regional Directors. OSWER 9355.0-30. April 22.

U.S. Environmental Protection Agency. 1991c. Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). Interim. Publication 9285.7-01B.

U.S. Environmental Protection Agency (USEPA). 1992a. *Record of Decision.* September 30.

U.S. Environmental Protection Agency (USEPA). 1992b. Office of Emergency and Remedial Response. *Guidance for Data Useability in Risk Assessment (Part A).* Final. Publication 9285.7-09A, PB92-963356. April.

U.S. Environmental Protection Agency (USEPA). 1992c. Guidelines for exposure assessment. *57 Federal Register* 22888, May 29.

U.S. Environmental Protection Agency (USEPA) 1992d. *Supplemental Guidance to RAGS: Calculating the Concentration Term.* Publication 9285.7-081;, PB92-963373.

U.S. Environmental Protection Agency (USEPA). 1992e. Office of Air Quality Planning and Standards. *Guidelines for Predictive Baseline Emissions Estimation Procedures for Superfund Sites, Interim Final.* EPA-450/1-92-002. January.

U.S. Environmental Protection Agency (USEPA). 1992f. Office of Research and Development. *Dermal Exposure Assessment: Principles and Applications.* EPA/600/8-91/011B. January.

U.S. Environmental Protection Agency (USEPA). 1993a. Office of Solid Waste and Emergency Response. *Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.* Washington D.C. May 5 and November 4.

U.S. Environmental Protection Agency (USEPA). 1993b. Office of Research and Development. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.* EPA/600/R-93/089. July.

U.S. Environmental Protection Agency (USEPA). Region V. 1994a. *Administrative Order for Remedial Design and Remedial Action.* September 30.

U.S. Environmental Protection Agency (USEPA). 1994b. Office of Solid Waste and Emergency Response (OSWER). *Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children.* EPA/540/R-93/081. Research Triangle Park, N.C. February.

U.S. Environmental Protection Agency (USEPA). 1994c. Office of Solid Waste and Emergency Response (OSWER). *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities.* OSWER Directive #9335.4-12. July 14.

U.S. Environmental Protection Agency (USEPA). 1995a. Office of Solid Waste and Emergency Response. *Land Use in the CERCLA Remedy Selection Process.* OSWER Directive No. 9355.7-04. May 25.

U.S. Environmental Protection Agency (USEPA). 1995b. Office of Air Quality Planning and Standards. Emissions, Monitoring, and Analysis Division. *SCREEN3 Model User's Guide.* EPA-454/B-95-004.

U.S. Environmental Protection Agency (USEPA). 1995c. *Policy for Risk Characterization at the U.S. Environmental Protection Agency.* March 21.

U.S. Environmental Protection Agency (USEPA) Region 4. 1995d. Office of Health Assessment. *Supplemental Guidance to Rags: Region 4 Bulletins, Human Health Risk Assessment, Interim.* November.

U.S. Environmental Protection Agency (USEPA). 1996a. Office of Emergency and Remedial Response. *Soil Screening Guidance: Technical Background Document.* EPA/540/R-95/128. May.

U.S. Environmental Protection Agency (USEPA). 1996b. Technical Review Workgroup for Lead. *Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil.* December.

U.S. Environmental Protection Agency (USEPA). 1996c. *Draft Report, Volume I - General Factors, Exposure Factors Handbook.* August.

U.S. Environmental Protection Agency (USEPA). 1997a. *Health Effects Assessment Summary Tables (HEAST), FY 1997 Update.* EPA 540/R-97/036. July 31.

U.S. Environmental Protection Agency (USEPA). 1997b. Draft dermal guidance provided by USEPA Region 5, July 14.

U.S. Environmental Protection Agency (USEPA). 1997c. *Exposure Factors Handbook.* August.

U.S. Environmental Protection Agency (USEPA). 1998a. *Risk Assessment Guidance for Superfund: Volume 1 Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessment).*

U.S. Environmental Protection Agency (USEPA). 1998b. Integrated Risk Information System (IRIS) on-line database. October.

U.S. Environmental Protection Agency (USEPA) Region IX. 1998c. *Region 9 Preliminary Remediation Goals (PRGs) 1998.* May 1.

U.S. Environmental Protection Agency (USEPA). 1998d. *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual. Supplemental Guidance, Dermal Risk Assessment.* Interim Guidance. NCEA-W-0364. Office of Emergency and Remedial Response.

U.S. Environmental Protection Agency (USEPA). 1998e. Comments on "Additional Items Requested in EPA's 4/28/98 Review" of Baseline Risk Assessment Deliverable, American Chemical Service NPL Site, Griffith Indiana. Memorandum from Pat Van Leeuwen to Sheri Bianchin, Remedial Project Manager. August 19.

Vilizan-Leman & Assoc. 1975. *Master Plan for Future Land Use, Griffith, Indiana.* Sponsored by the Griffith Planning Commission. May.

Warzyn, Inc. 1991a. *Remedial Investigation Report, ACS NPL Site, Griffith, Indiana. Volumes 1 and 2.* Prepared for Steering Committee, ACS PRP Group. June.

Warzyn, Inc. 1991b. *Remedial Investigation Report, Baseline Risk Assessment, ACS NPL Site, Griffith, Indiana. Volumes 1, 2, and 3.* Prepared for Steering Committee, ACS PRP Group. September.

Warzyn, Inc. 1992. Final Report Feasibility Study, ACS NPL Site, Griffith, Indiana. Prepared for Steering Committee, ACS PRP Group. June.

Warzyn, Inc. 1993. *Supplemental Soil Sampling Investigation, American Chemical Services NPL Site, Griffith.* Prepared for American Chemical Services Site Technical Committee, Griffith, Indiana. August.

Wester, R., J. Melendres, F. Logan, X. Hui, and H. Maibach. 1996. Percataneous Absorption of 2,4-Dichlorophenoxyacetic Acid from Soil with Respect to Soil Load and Skin Contact Time: *In Vivo* Absorption in Rhesus Monkey and Absorption in Human Skin. *Journal of Tox. And Env. Health.* 47: 335-344.

Figures

SDMS US EPA REGION V

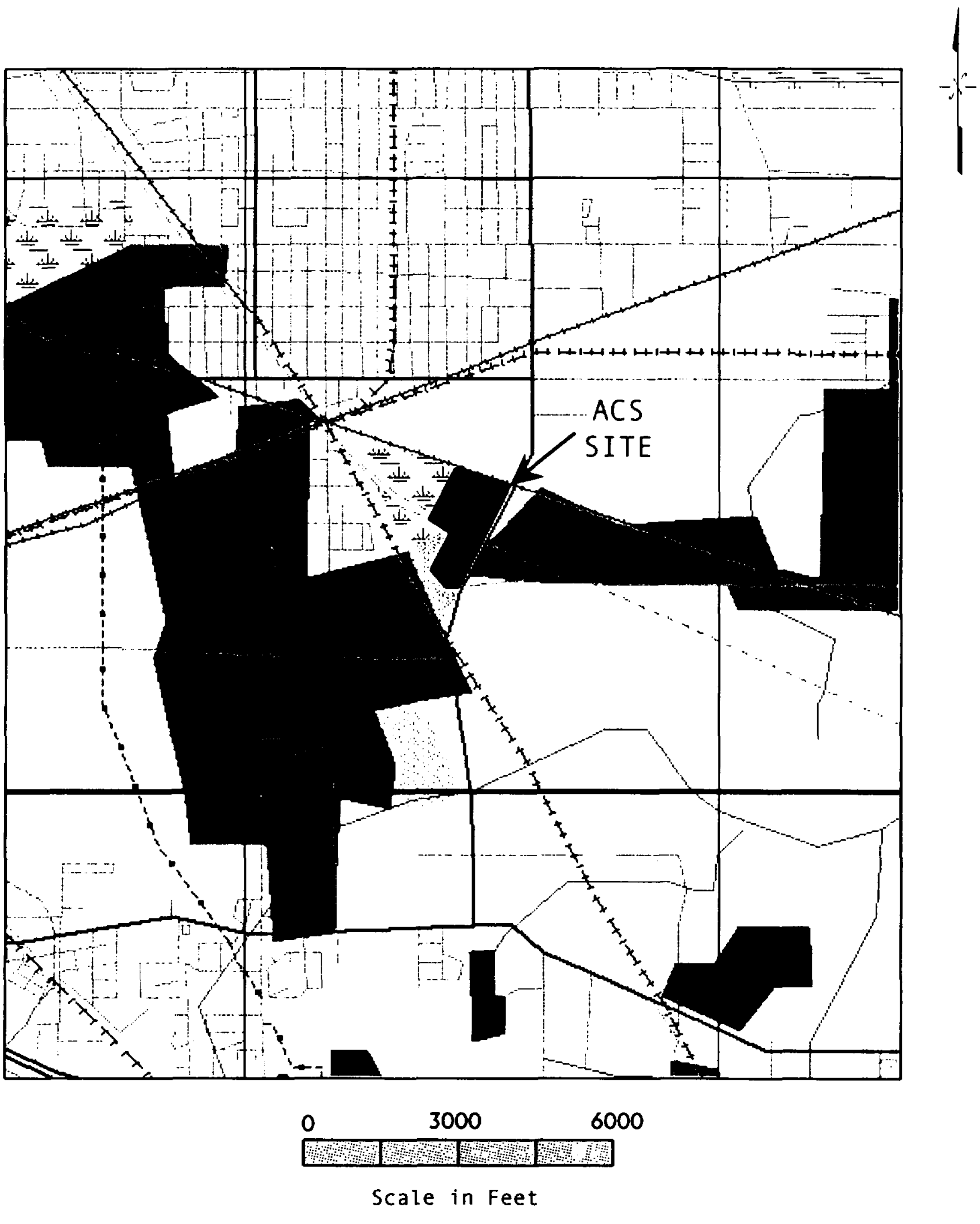
COLOR-RESOLUTION - 3

IMAGERY INSERT FORM

The following page(s) of this document include color or resolution variations. Unless otherwise noted, these pages are available in monochrome. The original document is available for viewing at the Superfund Records Center.

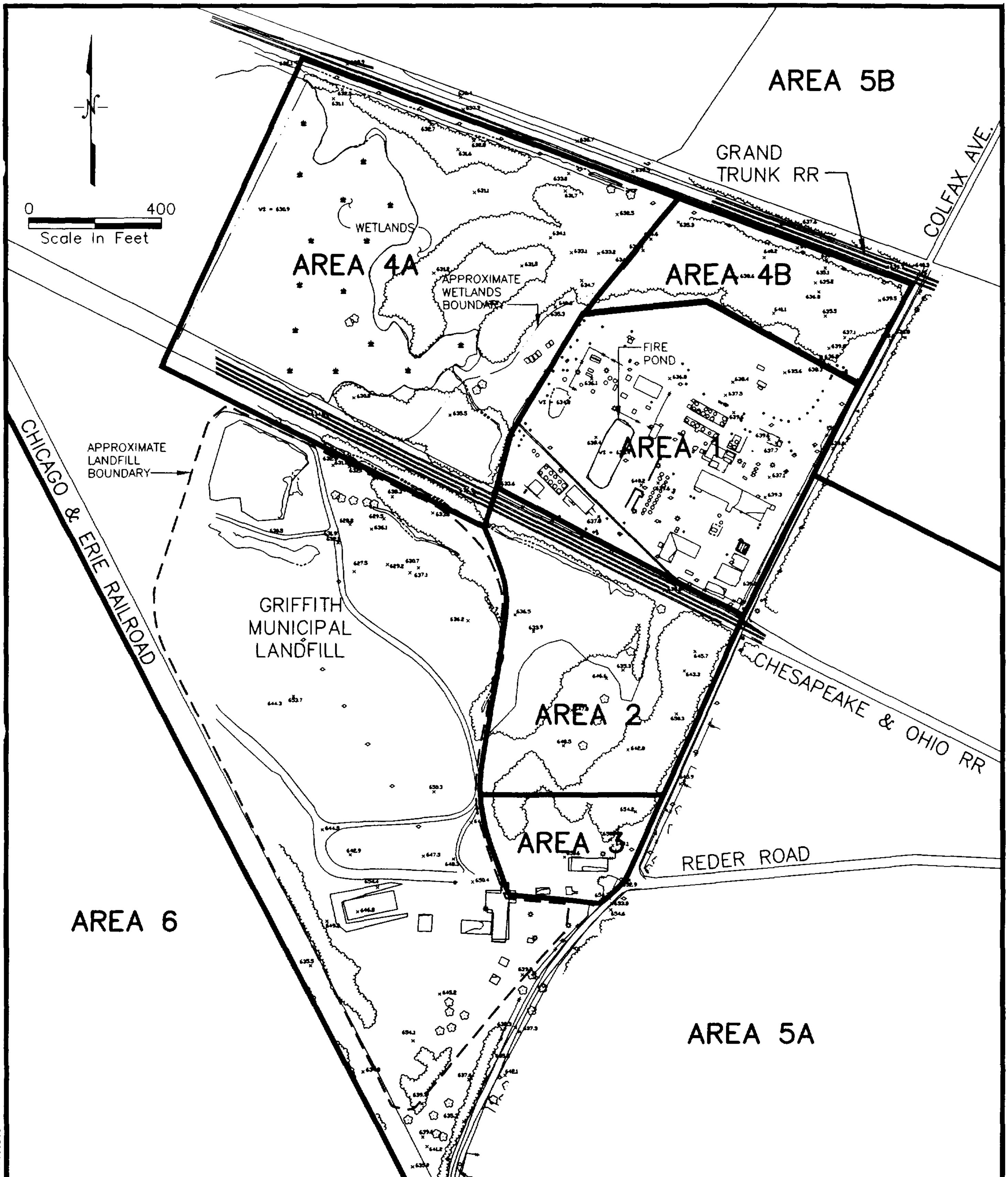
SITE NAME	AMERICAN CHEMICAL
DOC ID #	151746
DESCRIPTION OF ITEM(S)	SITE LOCATION MAP
DOCUMENT VARIATION	COLOR
PHASE	REM-1
OPERABLE UNITS	
LOCATION	Box #_1__ Folder #_2__ Subsection_____
PHASE (AR DOCUMENTS ONLY)	___ Remedial ___ Removal ___ Deletion Docket ___Original ___ Update #__ Volume __of__

COMMENT(S)



SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, DeLORME 3-D TOPOQUADS

BLACK & VEATCH SPECIAL PROJECTS CORP.	SITE LOCATION MAP ACS NPL SITE GRIFFITH, INDIANA	FIGURE 1



SOURCE: REVISED BASELINE RISK ASSESSMENT, AMERICAN CHEMICAL SERVICES SITE (ENVIRON 1998)

BLACK & VEATCH
SPECIAL PROJECTS CORP.

SITE LAYOUT MAP
ACS NPL SITE
GRIFFITH, INDIANA

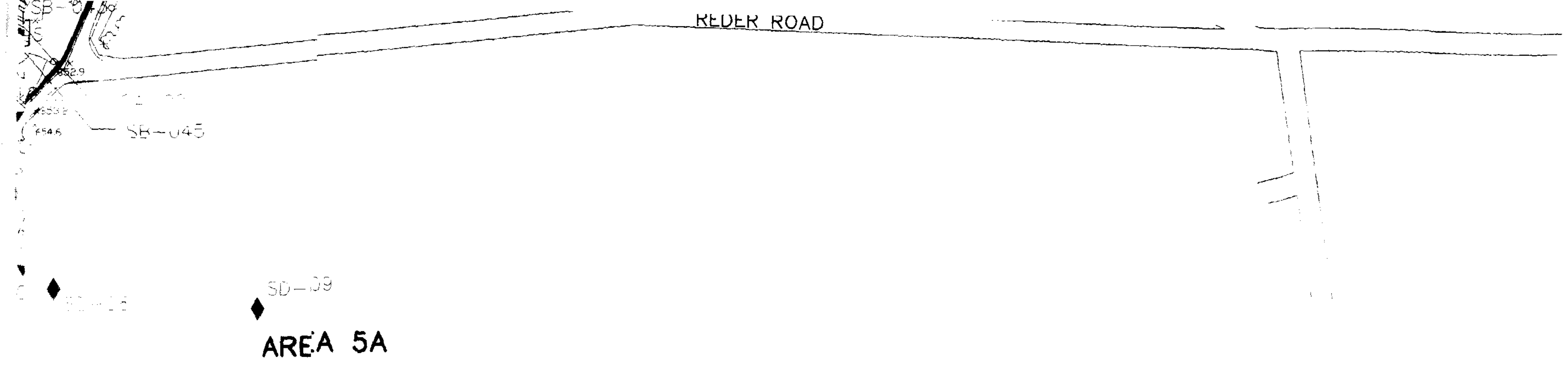
FIGURE 2

PLOTTER: hp CONFIG: rel 12
IGINAL DWG SIZE 8.5 x 11
AD FILE NO: C0006513
46517.237
03299PROC
OUTLINE
5/30/00 06

SDMS US EPA REGION V
FORMAT- OVERSIZED - 5
IMAGERY INSERT FORM

The item(s) listed below are not available in SDMS. In order to view original document or document pages, contact the Superfund Records Center.

SITE NAME	**AMERICAN CHEMICAL**
DOC ID #	**151746**
DESCRIPTION OF ITEM(S)	**OVERSIZE SITE MAP**
REASON WHY UNSCANNABLE	**_X_ OVERSIZED** | **OR** | **___ FORMAT**
DATE OF ITEM(S)	10/23/98
NO. OF ITEMS	~~4~~ 2
PHASE	**REM**
PRP	
PHASE (AR DOCUMENTS ONLY)	___ Remedial ___ Removal ___ Deletion Docket ___ AR ___ Original ___ Update # ___ Volume ___ of ___
O.U.	
LOCATION	**Box # 1 Folder # 3 Subsection ______**
COMMENT(S)	
PARTIAL COPY OF OVERSIZED SITE MAP FIGURE 3-4	



SOURCE: REVISED BASELINE RISK ASSESSMENT,
AMERICAN CHEMICAL SERVICES SITE
(ENVIRON 1998)

APP	FLM

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF INDIANA

SIGNED ____________________

DATE __________ REG NO. __________

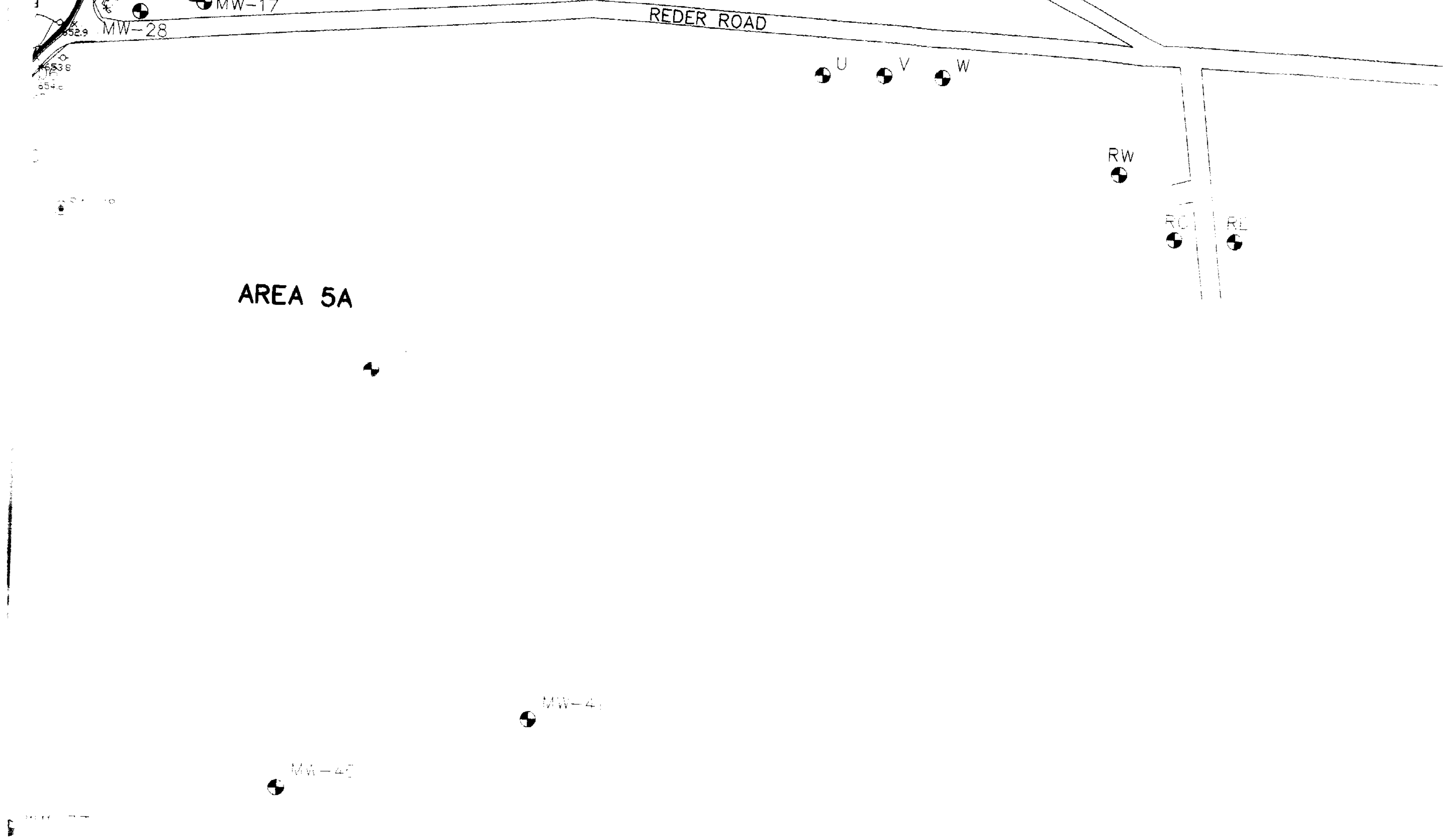
BLACK & VEATCH SPECIAL PROJECTS CORP.

ENGINEER	DRAWN MP
CHECKED	DATE 10/23/98

ACS NPL SITE
GRIFFITH, INDIANA

SOIL AND SEDIMENT
SAMPLE LOCATION MAP

PROJECT	DRAWING NUMBER	REV
	FIGURE 3	
CODE		
AREA		



SOURCE: REVISED BASELINE RISK ASSESSMENT, AMERICAN CHEMICAL SERVICES SITE (ENVIRON 1998)

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF INDIANA

SIGNED ______________________

DATE ____________ REG NO. __________

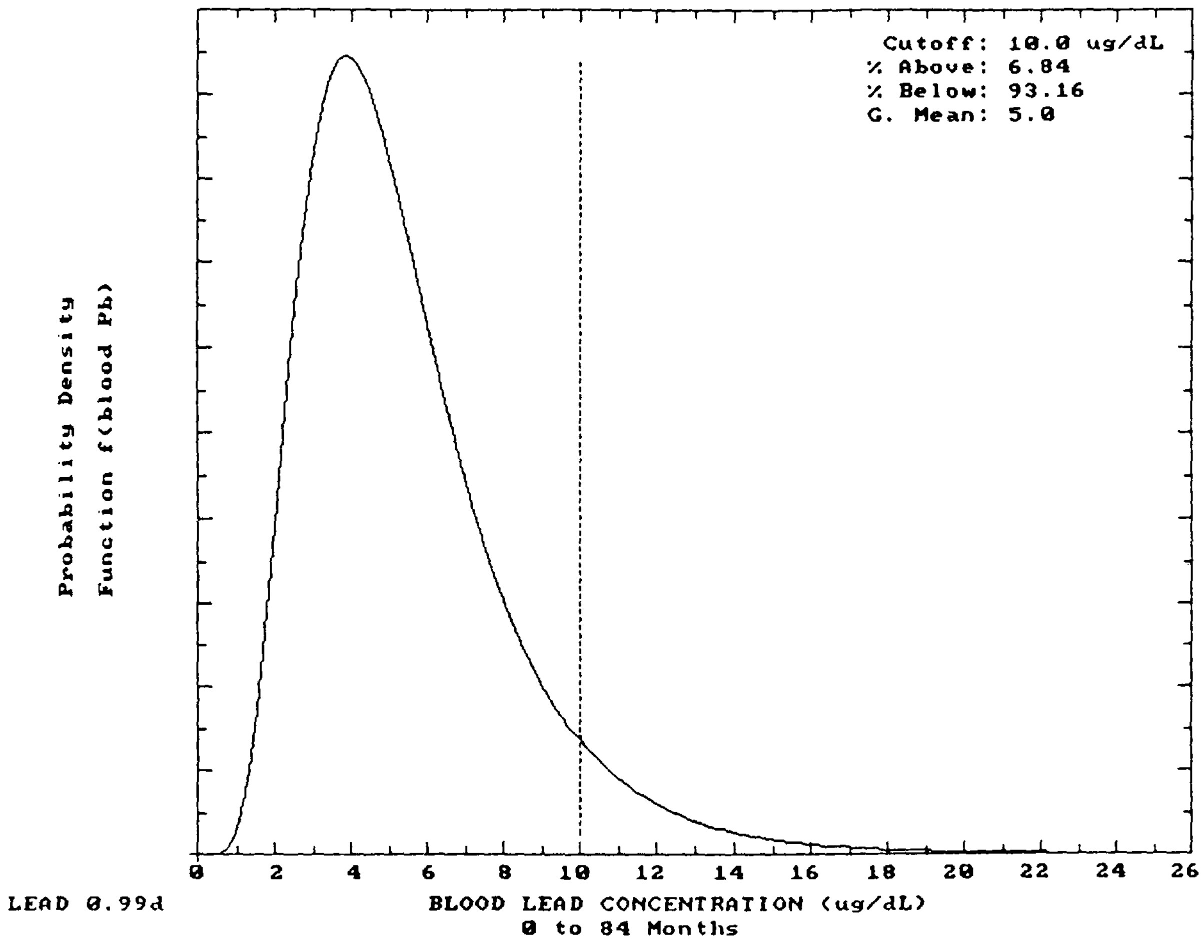
BLACK & VEATCH
SPECIAL PROJECTS CORP

ENGINEER	DRAWN MP
CHECKED	DATE 10/23/98

ACS NPL SITE
GRIFFITH, INDIANA

GROUND WATER AND SUFACE WATER
SAMPLE LOCATION MAP

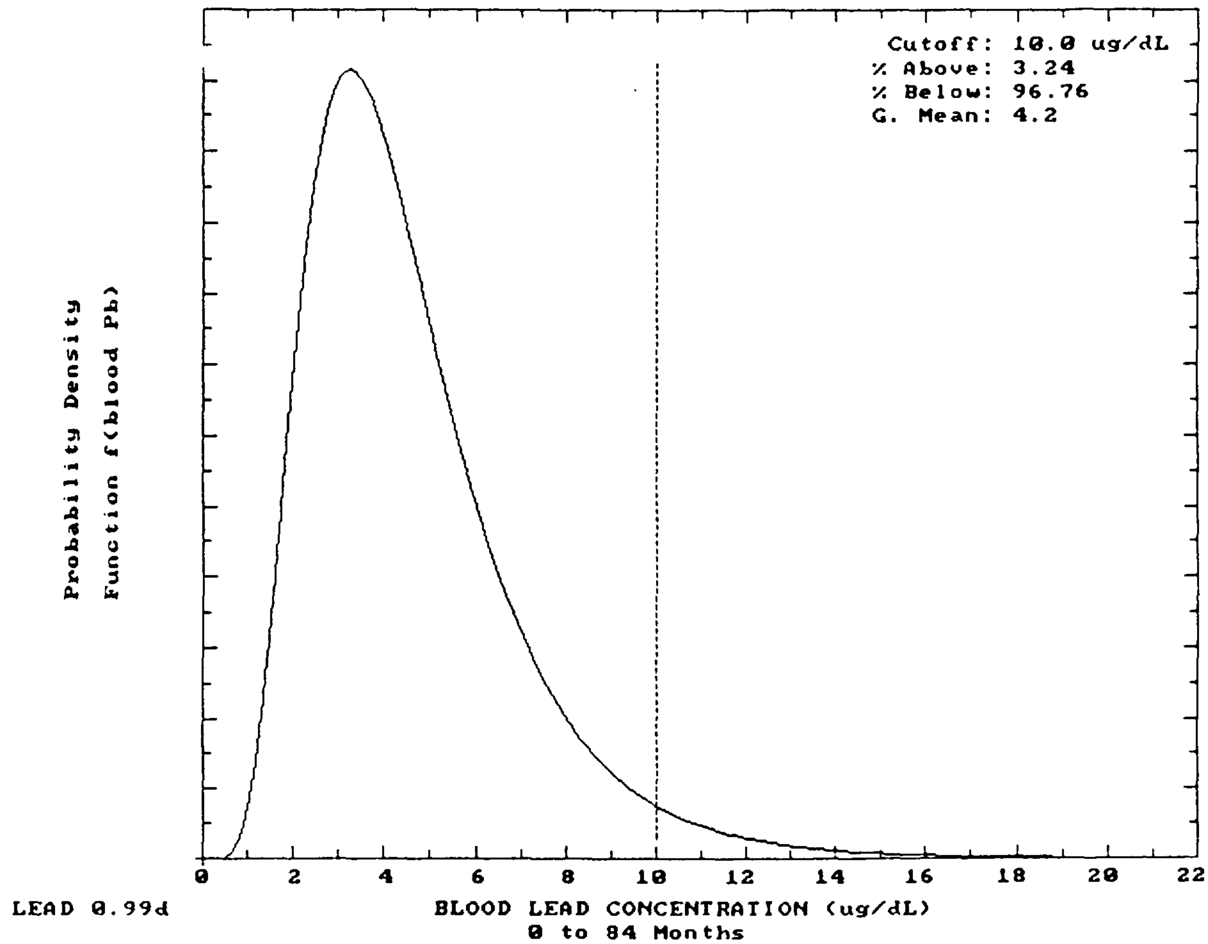
PROJECT	DRAWING NUMBER	REV
	FIGURE 4	
CODE		
AREA		



Probability Curve for
Current Child Residential
Exposure to Lead in Area 5A

Drinking Water Concentration
of 22 µg/L from Private Well

BLACK & VEATCH SPECIAL PROJECTS CORP.	ACS NPL SITE GRIFFITH, INDIANA	FIGURE 5



Probability Curve for
Future Child Residential
Exposure to Lead in Area 5A

Drinking Water Concentration
of 11.6 μg/L from Lower Aquifer

BLACK & VEATCH SPECIAL PROJECTS CORP.	ACS NPL SITE GRIFFITH, INDIANA	FIGURE 6

through 2-12-7

Table 2-1
Soil Samples Included in the Risk Calculations
American Chemical Services
Griffith, Indiana

Surface Soil Area 1	Surface Soil Area 3	Surface Soil Area 5	Subsurface Soil Area 1	Subsurface Soil Area 2	Subsurface Soil Area 3
ACS-SA03-03	ACS-SA01-03	ACS-SS01-AVG	ACS-SB08-06	ACS-SB04-05	ACS-SB01-03
ACS-SS101	ACS-SA02-03	ACS-SS02-001	ACS-SB08-10	ACS-SB28-08	ACS-SB01-09
ACS-SS102	ACS-SB31-02		ACS-SB09-06	ACS-SB36-10	ACS-SB02-05_5
ACS-SS104	ACS-SB32-02		ACS-SB09-10	ACS-SB37-10	ACS-SB02-07
ACS-SS105	ACS-SB33-02		ACS-SB10-05	ACS-SB38-10	ACS-SB02-08_5
ACS-SS106	ACS-SB43-01		ACS-SB10-10	ACS-SB39-10	ACS-SB29-08
ACS-SS107	ACS-SB43-04_5		ACS-SB11-05	ACS-SB40-10	ACS-SB30-10
ACS-SS108	ACS-SB44-01		ACS-SB11-10	ACS-SB42-05_5	ACS-SB41-05_5
ACS-SS109	ACS-SB44-04_5		ACS-SB110-SS4-07-09'	D01-S-IEA	ACS-SB43-04_5
ACS-SS110	ACS-SB45-01		ACS-SB113-SS4-07-09'	D02-S-IEA	ACS-SB44-04_5
ACS-SS111	ACS-SB45-04_5		ACS-SB113-SS4-07-09'-DIL	SA01-S-IEA-01	ACS-SB45-04_5
ACS-SS112	ACS-SB46-01		ACS-SB118-SS3-06-08'	SA01-S-IEA-02	ACS-SB46-04_5
ACS-SS113	ACS-SB46-04_5		ACS-SB119-SS3-06-08'	SA02-S-IEA	ACS-SB47-04_5
SS103-AVG	ACS-SB47-01		ACS-SB12-05	SA04-S-IEA	ACS-SB48-04_5
	ACS-SB47-04_5		ACS-SB12-10	SB-083-AVG	ACS-SB49-04_5
	ACS-SB48-01		ACS-SB127-SS3-06-08'	SB77-07-FT	ACS-SB50-04_5
	ACS-SB48-04_5		ACS-SB127-SS3-06-08'-DIL	SB77-09-FT	ACS-SB51-04_5
	ACS-SB50-01		ACS-SB13-05	SB78-07-FT	ACS-SB52-04_5
	ACS-SB50-04_5		ACS-SB13-10	SB78-10-FT	ACS-SB53-04_5
	ACS-SB52-01		ACS-SB16-06	SB79-06-FT	ACS-SB54-04_5
	ACS-SB52-04_5		ACS-SB17-06_5	SB79-08-FT	ACS-TP01-03_5
	ACS-SB53-01		ACS-SB18-07	SB80-06-FT	ACS-TP01-06
	ACS-SB53-04_5		ACS-SB20-07	SB80-08-FT	KP01-S-IEA
			ACS-SB21-07	SB81-04-FT	SB84-05-FT
			ACS-SB55-07	SB81-06-FT	SB85-05-FT
			ACS-SB56-07	SB82-04_5-FT	SB86-03-FT
			ACS-SB57-07	SB82-06_5-FT	SB87-07-FT
			ACS-SB58-07	T12-S-IEA	SB88-07_5-FT
			ACS-SB59-07		SP01-S-IEA
			ACS-SB60-07		SP02-S-IEA
			ACS-SB61-07		
			ACS-SB62-07		
			ACS-SB63-07		
			ACS-SB64-07		
			ACS-SB65-07		
			ACS-SB66-07		
			ACS-SB67-07		
			ACS-SB68-07		
			ACS-SB69-08		
			ACS-SB70-08		
			ACS-SB71-08		
			ACS-SB72-08		
			ACS-SB73-05		
			ACS-SB74-05		
			ACS-TP02-03		
			ACS-TP02-05		
			ACS-TP03-09		
			ACS-TP04-08		
			ACS-TP05-03		
			ACS-TP06-04		
			ACS-TP07-03		
			SB-089-AVG		
			SB-090-AVG		
			SB-128-AVG		
			SB89-03-FT		
			SB90-03-FT		
			SB91-03-FT		
			SB91-05-FT		
			SB92-03-FT		
			SB92-05-FT		
			SB93-03-FT		
			SB93-05-FT		
			SB94-03-FT		
			SB94-05-FT		
			SB95-03-FT		
			SB96-03-FT		
			SS01-AVG		
			SS02		

Table 2-1 (continued)
Soil Samples Included in the Risk Calculations
American Chemical Services
Griffith, Indiana

Con 0-10 Area 1	Con 0-10 Area 2	Con 0-10 Area 3	Con 0-4 Area 1	Con 0-4 Area 2	Con 0-4 Area 3
ACS-SA03-03	ACS-SB04-05	ACS-SA01-03	ACS-SA03-03	D01-S-IEA	ACS-SA01-03
ACS-SB08-06	ACS-SB28-08	ACS-SA02-03	ACS-SS101	D02-S-IEA	ACS-SA02-03
ACS-SB08-10	ACS-SB36-10	ACS-SB01-03	ACS-SS102	SA01-S-IEA-01	ACS-SB01-03
ACS-SB09-06	ACS-SB37-10	ACS-SB01-09	ACS-SS104	SA01-S-IEA-02	ACS-SB31-02
ACS-SB09-10	ACS-SB38-10	ACS-SB02-05_5	ACS-SS105	SA02-O-IEA-01	ACS-SB32-02
ACS-SB10-05	ACS-SB39-10	ACS-SB02-07	ACS-SS106	SA02-O-IEA-02	ACS-SB33-02
ACS-SB10-10	ACS-SB40-10	ACS-SB02-08_5	ACS-SS107	SA02-S-IEA	ACS-SB43-01
ACS-SB11-05	ACS-SB42-05_5	ACS-SB29-08	ACS-SS108	SA04-O-IEA-01	ACS-SB44-01
ACS-SB11-10	D01-S-IEA	ACS-SB30-10	ACS-SS109	SA04-O-IEA-02	ACS-SB45-01
ACS-SB110-SS4-07-09'	D02-S-IEA	ACS-SB31-02	ACS-SS110	SA04-S-IEA	ACS-SB46-01
ACS-SB112-SS5-09-11'	SA01-S-IEA-01	ACS-SB32-02	ACS-SS111	SB81-04-FT	ACS-SB47-01
ACS-SB112-SS5-09-11'-DIL	SA01-S-IEA-02	ACS-SB33-02	ACS-SS112	T12-S-IEA	ACS-SB48-01
ACS-SB113-SS4-07-09'	SA02-S-IEA	ACS-SB41-05_5	ACS-SS113		ACS-SB50-01
ACS-SB113-SS4-07-09'-DIL	SA04-S-IEA	ACS-SB43-01	ACS-TP02-03		ACS-SB52-01
ACS-SB118-SS3-06-08'	SB-083-AVG	ACS-SB43-04_5	ACS-TP05-03		ACS-SB53-01
ACS-SB119-SS3-06-08'	SB77-07-FT	ACS-SB44-01	ACS-TP06-04		ACS-TP01-03_5
ACS-SB12-05	SB77-09-FT	ACS-SB44-04_5	ACS-TP07-03		KP01-S-IEA
ACS-SB12-10	SB78-07-FT	ACS-SB45-01	SB89-03-FT		SB86-03-FT
ACS-SB124-SS4-08_5-10_5'	SB78-10-FT	ACS-SB45-04_5	SB90-03-FT		SP01-S-IEA
ACS-SB124-SS4-08_5-10_5'-DIL	SB79-06-FT	ACS-SB46-01	SB91-03-FT		SP02-S-IEA
ACS-SB127-SS3-06-08'	SB79-08-FT	ACS-SB46-04_5	SB92-03-FT		
ACS-SB127-SS3-06-08'-DIL	SB80-06-FT	ACS-SB47-01	SB93-03-FT		
ACS-SB13-05	SB80-08-FT	ACS-SB47-04_5	SB94-03-FT		
ACS-SB13-10	SB81-04-FT	ACS-SB48-01	SB95-03-FT		
ACS-SB16-06	SB81-06-FT	ACS-SB48-04_5	SB96-03-FT		
ACS-SB17-06_5	SB82-04_5-FT	ACS-SB49-04_5	SS01-AVG		
ACS-SB18-07	SB82-06_5-FT	ACS-SB50-01	SS02		
ACS-SB20-07	T12-S-IEA	ACS-SB50-04_5	SS103-AVG		
ACS-SB21-07		ACS-SB51-04_5			
ACS-SB55-07		ACS-SB52-01			
ACS-SB56-07		ACS-SB52-04_5			
ACS-SB57-07		ACS-SB53-01			
ACS-SB58-07		ACS-SB53-04_5			
ACS-SB59-07		ACS-SB54-04_5			
ACS-SB60-07		ACS-TP01-03_5			
ACS-SB61-07		ACS-TP01-08			
ACS-SB62-07		KP01-S-IEA			
ACS-SB63-07		SB84-05-FT			
ACS-SB64-07		SB85-05-FT			
ACS-SB65-07		SB86-03-FT			
ACS-SB66-07		SB87-07-FT			
ACS-SB67-07		SB88-07_5-FT			
ACS-SB68-07		SP01-S-IEA			
ACS-SB69-08		SP02-S-IEA			
ACS-SB70-08					
ACS-SB71-08					
ACS-SB72-08					
ACS-SB73-05					
ACS-SB74-05					
ACS-SS101					
ACS-SS102					
ACS-SS104					
ACS-SS105					
ACS-SS106					
ACS-SS107					
ACS-SS108					
ACS-SS109					
ACS-SS110					
ACS-SS111					
ACS-SS112					
ACS-SS113					
ACS-TP02-03					
ACS-TP02-05					
ACS-TP03-09					
ACS-TP04-08					
ACS-TP05-03					
ACS-TP06-04					
ACS-TP07-03					
SB-089-AVG					
SB-090-AVG					
SB-128-AVG					
SB89-03-FT					
SB90-03-FT					
SB91-03-FT					
SB91-05-FT					
SB92-03-FT					
SB92-05-FT					
SB93-03-FT					
SB93-05-FT					
SB94-03-FT					
SB94-05-FT					
SB95-03-FT					
SB96-03-FT					
SS01-AVG					
SS02					
SS103-AVG					

Table 2-2
Sediment Samples Included in the Risk Calculations
American Chemical Services
Griffith, Indiana

Area 1	Area 2	Area 4A		Area 4B	Area 6
ACS-SD-01-01	ACS-SD-05-01	ACS-SD-03-01	APD-SD-C06 (0_5)	ACS-ST01-001	ACS-SD-06-01
ACS-SD-02-01	ACS-SD-15-01	ACS-SD-04-01	APD-SD-C06 (1)	ACS-ST02-001	ACS-SD-13-01
		ACS-SD-07A-01	APD-SD-C07 (1)	APD-SD-28-01	ACS-SD-14-01
		ACS-SD-07B-01	APD-SD-C07 (1_5)	APD-SD-30-01	ACS-ST05-001
		ACS-SD-07C-01	APD-SD-C08 (0_5)	SD29-AVG	ACS-ST06-001
		ACS-SD-10-01	APD-SD-C08 (1)	SD29-RE-AVG	ACS-ST07-001
		ACS-SD-11-01	APD-SD-C09 (1)		ACS-ST08-001
		ACS-SD-12-01	APD-SD-C10 (0_5)		ACS-ST09-001
		ACS-SD-16-01	APD-SD-C10 (1)		ACS-ST10-001
		APD-Culvert Downstream (0_5)	APD-SD-C11 (0_5)		ACS-ST11-101
		APD-Culvert Outfall (0_5)	APD-SD-C11 (1)		ST04-AVG
		APD-Culvert Outfall (1)	APD-SD-C11 (1_5)		
		APD-Culvert Upstream (1) (0_5)	APD-SD-D03 (0_5)		
		APD-Culvert Upstream (2) (0_5)	APD-SD-D06 (0_5)		
		APD-SD-17-01	APD-SD-D07 (0_5)		
		APD-SD-17-01-RE	APD-SD-D08 (0_5)		
		APD-SD-19-01	APD-SD-D09 (0_5)		
		APD-SD-20-01	APD-SD-D10 (0_5)		
		APD-SD-20-01-RE	APD-SD-D11 (0_5)		
		APD-SD-21-01	APD-SD-D11 (1)		
		APD-SD-21-01-RE	APD-SD-T1 (A) (0_5)		
		APD-SD-22-01-RE	APD-SD-T1 (B) (0_5)		
		APD-SD-23-01	APD-SD-T1 (B) (1)		
		APD-SD-23-01-RE	APD-SD-T1 (C) (0_5)		
		APD-SD-24-01	APD-SD-T1 (C) (1)		
		APD-SD-25-01	APD-SD-T1 (D) (0_5)		
		APD-SD-26-01	APD-SD-T1 (D) (1)		
		APD-SD-27-01	APD-SD-T1 (E)		
		APD-SD-31-01	APD-SD-T1 (E) (0_5)		
		APD-SD-32-01	APD-SD-T2 (A) (0_5)		
		APD-SD-33-01	APD-SD-T2 (A) (1)		
		APD-SD-33-01-RE	APD-SD-T2 (B) (0_5)		
		APD-SD-34-01	APD-SD-T2 (B) (1)		
		APD-SD-35-01	APD-SD-T2 (C) (0_5)		
		APD-SD-35-01-RE	APD-SD-T2 (C) (1)		
		APD-SD-36-01	APD-SD-T2 (C) (1_5)		
		APD-SD-37-01	APD-SD-T2 (D) (0_5)		
		APD-SD-38-01	APD-SD-T2 (D) (1)		
		APD-SD-A02 (0_5)	APD-SD-T2 (D) (1_5)		
		APD-SD-A05 (0_5)	APD-SD-T2 (E) (0_5)		
		APD-SD-A05 (1_5)	APD-SD-T3 (A) (0_5)		
		APD-SD-A09 (0_5)	APD-SD-T3 (A) (1)		
		APD-SD-A10 (0_5)	APD-SD-T3 (A) (1_5)		
		APD-SD-B01 (0_5)	APD-SD-T3 (B) (0_5)		
		APD-SD-B04 (0_5)	APD-SD-T3 (B) (1)		
		APD-SD-B05 (0_5)	APD-SD-T3 (B) (1_5)		
		APD-SD-B05 (1)	APD-SD-T3 (C) (1)		
		APD-SD-B06 (0_5)	APD-SD-T3 (D) (0_5)		
		APD-SD-B07 (0_5)	APD-SD-T3 (D) (1)		
		APD-SD-B08 (0_5)	APD-SD-T3 (E) (0_5)		
		APD-SD-B09 (0_5)	APD-SD-T4 (A) (0_5)		
		APD-SD-B09 (1)	APD-SD-T4 (B) (0_5)		
		APD-SD-B10 (0_5)	APD-SD-T4 (C) (1)		
		APD-SD-B10 (1)	APD-SD-T4 (C) (1_5)		
		APD-SD-B11 (0_5)	APD-SD-T4 (D) (0_5)		
		APD-SD-C02 (0_5)	C07-AVG (0_5)		
		APD-SD-C04 (0_5)	SD18-AVG		
		APD-SD-C05 (0_5)	SD22-AVG		
		APD-SD-C05 (1)	SD26-AVG		
		APD-SD-C05 (1_5)			

Table 2-3
Surface Water Samples Included in the Risk Calculations
American Chemical Services
Griffith, Indiana

Area 1	Area 2	Area 4A	Area 4B
ACS-SW01-01	ACS-SW05-01	97ZB02S05	97ZB04S21
ACS-SW02-01		ACS-SW07A-01	
		APD-SW09-01	
		APD-SW10-01	
		APD-SW11-01	
		APD-SW12-01	
		APD-SW13-01	
		APD-SW15-01	
		APD-SW15-91	
		APD-SW16-01	
		APD-SW17-01	
		APD-SW18-01	
		APD-SW19-01	
		APD-SW20-01	
		APD-SW20-91	
		SW15-AVG	
		SW20-AVG	

Table 2-4
Groundwater Samples Included in the Risk Calculations
American Chemical Services
Griffith, Indiana

Upper Aquifer Area 1	Upper Aquifer Area 4B	Upper Aquifer Area 5A	Upper Aquifer Area 5B	Lower Aquifer Area 5A	Lower Aquifer Overall		Private Wells
MW02-01-1989	MW03-01-1989	MW06-01-1989	MW48-01-1996	MW07-01-1990	97ZB04S20	MW24-01-1991	PW01-01-1990
MW02-02-1990	MW03-01-1994	MW06-01-1994	MW48-01-1997	MW07-01-1995-AVG	IW1-1997-AVG	MW24-01-1995	PW02-01-1990
MW03-01-1989	MW03-02-1990	MW06-01-1996	MW48-01-1997-EPA	MW07-01-1996	IW2-1997	MW24-01-1996	PW03-01-1990
MW03-01-1994	MW04-01-1989	MW06-01-1997	MW48-02-1997	MW07-01-1997	IW3-1997	MW24-01-1997	PW04-01-1990
MW03-02-1990	MW04-01-1994	MW06-01-1997-EPA-AVG	MW48-03-1997	MW07-02-1990	IW4-1997-AVG	MW24-02-1997	PW05-01-1990
MW04-01-1989	MW04-02-1990	MW06-02-1990	MW48-04-1997	MW07-02-1997	IW6-1997	MW24-03-1997	PW08-01-1990
MW04-01-1994	MW11-01-1990	MW06-02-1997		MW07-03-1991-AVG	M04D-01-1995	MW24-04-1997	PW09-01-1991
MW04-02-1990	MW11-01-1995	MW06-03-1997		MW07-03-1997	M04D-01-1997	MW28-01-1997	PW10-01-1991-AVG
MW05-01-1989	MW11-01-1996	MW06-04-1997		MW07-04-1997	M04D-01-1997-EPA	MW28-01-1997-EPA	PWA-01-1997
MW05-01-1994	MW11-01-1997	MW45-01-1996		MW22-01-1991	M04D-02-1997	MW28-02-1997	PWA-01-1997-EPA
MW05-02-1990	MW11-01RE-1996	MW45-01-1997-AVG		MW22-01-1994-AVG	M04D-03-1997	MW28-03-1997	PWB-01-1997
	MW11-02-1990	MW45-02-1997		MW22-01-1996	M04D-04-1997	MW28-04-1997	PWB-01-1997-EPA
	MW11-02-1997	MW45-03-1997		MW22-01-1997	MW-09-1997-EPA	MW28-1996	PWC-01-1997
	MW11-03-1991	MW45-04-1997		MW22-02-1997	MW07-01-1990	MW29-01-1997	PWC-01-1997-EPA
	MW11-03-1997			MW22-03-1997	MW07-01-1995-AVG	MW29-02-1997	PWD-01-1997
	MW11-04-1991			MW22-04-1997	MW07-01-1996	MW29-03-1997	PWD-02-1997
	MW11-04-1997			MW28-01-1997	MW07-01-1997	MW29-1996	PWI-01-1997-AVG
	MW39-01-1996			MW28-01-1997-EPA	MW07-02-1990	MW30-01-1997	PWI-01-1997-EPA
	MW39-01-1997			MW28-02-1997	MW07-02-1997	MW30-02-1997	PWJ-01-1997
	MW39-02-1997			MW28-03-1997	MW07-03-1991-AVG	MW30-03-1997	PWK-01-1997
	MW39-03-1997			MW28-04-1997	MW07-03-1997	MW30-04-1997	PWK-02-1997
	MW39-04-1997			MW28-1996	MW07-04-1997	MW30-1996	PWL-01-1997
	MW48-01-1996			MW36-01-1997	MW08-01-1990	MW31-01-1997	PWN-01-1997
	MW48-01-1997			MW36-02-1997	MW08-01-1994	MW31-02-1997	PWRC-01-1997
	MW48-01-1997-EPA			MW36-03-1997	MW08-01-1996	MW31-03-1997	PWRC-02-1997
	MW48-02-1997			MW36-04-1997	MW08-01-1997	MW31-04-1997	PWRE-01-1997-AVG
	MW48-03-1997			MW36-1996	MW08-02-1990	MW31-1996	PWRE-02-1997
	MW48-04-1997			MW50-01-1996	MW08-02-1997	MW32-01-1997	PWRW-01-1997
	MW49-01-1996-AVG			MW50-01-1997-AVG	MW08-03-1991	MW32-02-1997	PWS-01-1997
	MW49-01-1997			MW50-02-1997	MW08-03-1997	MW32-03-1997	PWT-01-1997
	MW49-02-1997-AVG				MW08-04-1997-AVG	MW32-04-1997	PWU-01-1997
	MW49-03-1997-AVG				MW09-01-1990	MW32-1996	PWV-01-1997
	MW49-04-1997				MW09-01-1995	MW32-1996-AVG	PWW-01-1997
					MW09-01-1996	MW33-01-1997	PWX-01-1997
					MW09-01-1997	MW33-02-1997	PWY-02-1997-AVG
					MW09-02-1990	MW33-03-1997	PWZ-02-1997
					MW09-02-1997-AVG	MW33-04-1997	
					MW09-03-1991	MW33-1996	
					MW09-03-1997	MW34-01-1997	
					MW10-01-1990	MW34-02-1997	
					MW10-01-1995	MW34-03-1997	
					MW10-02-1990	MW34-04-1997	
					MW10-03-1991	MW34-1996	
					MW10C-01-1990	MW35-1996	
					MW10C-01-1996	MW36-01-1997	
					MW10C-01-1997	MW36-02-1997	
					MW10C-01-1997-EPA	MW36-03-1997	
					MW10C-02-1997-AVG	MW36-04-1997	
					MW10C-03-1991	MW36-1996	
					MW10C-03-1997	MW50-01-1996	
					MW21-01-1991	MW50-01-1997-AVG	
					MW21-01-1995-AVG	MW50-02-1997	
					MW21-01-1996	MW51-01-1996-AVG	
					MW21-01-1997	MW51-01-1997	
					MW21-02-1997	MW51-01-1997-EPA	
					MW21-03-1997	MW51-02-1997	
					MW22-01-1991	MW51-03-1997	
					MW22-01-1994-AVG	MW51-04-1997	
					MW22-01-1996	MW52-01-1996	
					MW22-01-1997	MW52-01-1997	
					MW22-02-1997	MW52-02-1997	
					MW22-03-1997	MW52-03-1997	
					MW22-04-1997	MW52-04-1997	
					MW23-01-1991	MW53-01-1996	
					MW23-01-1995	MW53-01-1997-AVG	
					MW23-01-1996	MW53-02-1997	
					MW23-01-1997	MW53-03-1997	
					MW23-01-1997-EPA	MW53-04-1997	
					MW23-02-1997-AVG	MW54-01-1996	
					MW23-03-1997	MW54-01-1997	
					MW23-04-1997	MW54-02-1997	
						MW54-03-1997	
						MW54-04-1997	
						MW55-01-1996-AVG	
						MW55-01-1997	
						MW55-02-1997	
						MW55-03-1997	
						MW55-04-1997	

TABLE 2-5-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Soil, Area 1
Exposure Medium:	Soil, 0 to 2 feet
Exposure Point:	Soil

File: SS-A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
79005	1,1,2-Trichloroethane	1.30E-02		1.30E-02		mg/kg	SS103-AVG	1/14	0.013-0.013	1.30E-02		1.12E+01	NA	NA	YES	FD
540590	1,2-Dichloroethene (total)	6.50E-03		1.20E-02		mg/kg	ACS-SS108	2/14	0.007-0.012	1.20E-02		7.04E+02	NA	NA	YES	FD
91576	2-Methylnaphthalene	3.40E-01		3.40E-01		mg/kg	SS103-AVG	1/14	0.340-0.340	3.40E-01		1.56E+03	NA	NA	YES	FD
91941	3,3'-Dichlorobenzidine	2.10E-01		2.10E-01		mg/kg	ACS-SS101	1/14	0.210-0.210	2.10E-01		1.42E+00	NA	NA	YES	FD
208968	Acenaphthylene	5.70E-01		5.70E-01		mg/kg	SS103-AVG	1/14	0.570-0.570	5.70E-01			NA	NA	NO	NTX
7429905	Aluminum	3.57E+03	J	2.53E+04	J	mg/kg	ACS-SS109	14/14	3570.000-25300.	2.53E+04		7.82E+04	NA	NA	YES	FD
120127	Anthracene	6.50E-02		8.90E-02		mg/kg	SS103-AVG	2/14	0.055-0.089	8.90E-02		2.35E+04	NA	NA	YES	FD
7440360	Antimony	5.30E-01	J	1.75E+00	J	mg/kg	SS103-AVG	4/13	0.530-1.750	1.75E+00		3.13E+01	NA	NA	YES	FD
53469219	Aroclor-1242	3.90E-02		1.45E+00		mg/kg	SS103-AVG	4/14	0.039-1.450	1.45E+00		3.19E-01	NA	NA	YES	FD, ARV
12672296	Aroclor-1248	2.20E+00		2.20E+00		mg/kg	ACS-SS102	1/14	2.200-2.200	2.20E+00		3.19E-01	NA	NA	YES	FD, ARV
11097691	Aroclor-1254	8.00E-02		5.50E+00		mg/kg	ACS-SS101	11/14	0.080-5.500	5.50E+00		3.19E-01	NA	NA	YES	FD, ARV
11096825	Aroclor-1260	2.10E-01		1.70E+00		mg/kg	SS103-AVG	2/14	0.210-1.700	1.70E+00		3.19E-01	NA	NA	YES	FD, ARV
7440382	Arsenic	1.50E+00		3.30E+00		mg/kg	ACS-SS113	14/14	1.500-3.300	3.30E+00		4.26E-01	NA	NA	YES	FD, ARV
7440393	Barium	3.79E+01		2.39E+02		mg/kg	ACS-SS109	13/14	37.900-239.000	2.39E+02		5.48E+03	NA	NA	YES	FD
56553	Benzo(a)anthracene	4.40E-02		5.90E-02		mg/kg	ACS-SS107	2/14	0.044-0.059	5.90E-02		8.75E-01	NA	NA	YES	FD
50328	Benzo(a)pyrene	5.90E-02		8.25E-02		mg/kg	SS103-AVG	3/14	0.059-0.083	8.25E-02		8.75E-02	NA	NA	YES	FD
205992	Benzo(b)fluoranthene	8.15E-02		8.60E-02		mg/kg	ACS-SS109	3/14	0.082-0.086	8.60E-02		8.75E-01	NA	NA	YES	FD
207089	Benzo(k)fluoranthene	6.50E-02		7.25E-02		mg/kg	SS103-AVG	2/14	0.065-0.073	7.25E-02		8.75E+00	NA	NA	YES	FD
7440417	Beryllium	7.00E-02		5.80E+00		mg/kg	ACS-SS109	14/14	0.070-5.800	5.80E+00		1.60E+02	NA	NA	YES	FD
117817	bis(2-Ethylhexyl)phthalate	7.00E-02		9.80E+00		mg/kg	ACS-SS112	14/14	0.070-9.800	9.80E+00		4.56E+01	NA	NA	YES	FD
7440439	Cadmium	2.70E-01		5.20E+00		mg/kg	ACS-SS101	14/14	0.270-5.200	5.20E+00		7.82E+01	NA	NA	YES	FD
7440702	Calcium	3.72E+02	J	1.66E+05	J	mg/kg	ACS-SS109	14/14	372.000-166000.	1.66E+05			NA	NA	NO	NTX
75150	Carbon Disulfide	2.00E-03		2.00E-03		mg/kg	ACS-SS112	1/14	0.002-0.002	2.00E-03		7.82E+03	NA	NA	YES	FD
67663	Chloroform	2.00E-03		3.00E-03		mg/kg	ACS-SS109	2/14	0.002-0.003	3.00E-03		1.05E+02	NA	NA	YES	FD
16065831	Chromium (total)	1.12E+01	J	7.06E+01		mg/kg	ACS-SS101	14/14	11.200-70.600	7.06E+01		1.17E+05	NA	NA	YES	FD
218019	Chrysene	5.90E-02		7.40E-02		mg/kg	ACS-SS109	3/14	0.059-0.074	7.40E-02		8.75E+01	NA	NA	YES	FD
7440484	Cobalt	1.30E+00		4.50E+00		mg/kg	ACS-SS101	13/14	1.300-4.500	4.50E+00		4.69E+03	NA	NA	YES	FD
7440508	Copper	9.70E+00	J	5.53E+01	J	mg/kg	ACS-SS110	14/14	9.700-55.300	5.53E+01		3.13E+03	NA	NA	YES	FD
57125	Cyanide (total)	4.30E-01		1.20E+00		mg/kg	ACS-SS107	8/14	0.430-1.200	1.20E+00		1.56E+03	NA	NA	YES	FD
84742	Di-n-butylphthalate	5.10E-02		5.10E-02		mg/kg	ACS-SA03-03	1/14	0.051-0.051	5.10E-02		7.82E+03	NA	NA	YES	FD
117840	Di-n-octylphthalate	4.90E-02		1.10E-01		mg/kg	ACS-SS101	2/14	0.049-0.110	1.10E-01		1.56E+03	NA	NA	YES	FD
53494705	Endrin ketone	1.10E-02		1.10E-02		mg/kg	ACS-SS106	1/14	0.011-0.011	1.10E-02			NA	NA	NO	NTX
206440	Fluoranthene	6.70E-02		9.80E-02		mg/kg	ACS-SS107	3/14	0.067-0.098	9.80E-02		3.13E+03	NA	NA	YES	FD
118741	Hexachlorobenzene	2.90E-02		2.90E-02		mg/kg	ACS-SS110	1/14	0.029-0.029	2.90E-02		3.99E-01	NA	NA	YES	FD
193395	Indeno(1,2,3-cd)pyrene	4.40E-02		4.40E-02		mg/kg	ACS-SS109	1/14	0.044-0.044	4.40E-02		8.75E-01	NA	NA	YES	FD
7439896	Iron	2.05E+03		1.51E+04	J	mg/kg	ACS-SS101	14/14	2050.000-15100.	1.51E+04		2.35E+04	NA	NA	YES	FD

TABLE 2-5-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Soil, Area 1
Exposure Medium:	Soil, 0 to 2 feet
Exposure Point:	Soil

File: SS-A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
78591	Isophorone	3.70E-02		1.40E-01		mg/kg	ACS-SS101	4/14	0.037-0.140	1.40E-01		6.72E+02	NA	NA	YES	FD
7439921	Lead	2.31E+01	J	3.61E+02	J	mg/kg	ACS-SS101	14/14	23.100-361.000	3.61E+02		4.00E+02	NA	NA	YES	FD
7439954	Magnesium	5.62E+02	J	3.74E+04	J	mg/kg	ACS-SS109	14/14	562.000-37400.0	3.74E+04			NA	NA	NO	NTX
7439965	Manganese	1.94E+01	J	2.52E+03		mg/kg	ACS-SS109	14/14	19.400-2520.000	2.52E+03		1.56E+03	NA	NA	YES	FD, ARV
7439976	Mercury	7.00E-02	J	3.85E+00	J	mg/kg	SS103-AVG	8/9	0.070-3.850	3.85E+00			NA	NA	YES	NTX
7440020	Nickel	4.90E+00		1.19E+01		mg/kg	ACS-SS101	13/14	4.900-11.900	1.19E+01		1.56E+03	NA	NA	YES	FD
85018	Phenanthrene	5.00E-02		6.10E-02		mg/kg	ACS-SS107	2/14	0.050-0.061	6.10E-02			NA	NA	NO	NTX
7440097	Potassium	2.60E+02		3.74E+03	J	mg/kg	ACS-SS109	14/14	260.000-3740.00	3.74E+03			NA	NA	NO	NTX
129000	Pyrene	9.50E-02		1.20E-01		mg/kg	SS103-AVG	3/14	0.095-0.120	1.20E-01		2.35E+03	NA	NA	YES	FD
7782492	Selenium	4.20E-01	J	5.00E-01	J	mg/kg	ACS-SS101	2/14	0.420-0.500	5.00E-01		3.91E+02	NA	NA	YES	FD
7440224	Silver	1.80E-01	J	2.90E-01	J	mg/kg	ACS-SS109	4/14	0.180-0.290	2.90E-01		3.91E+02	NA	NA	YES	FD
7440235	Sodium	5.83E+01		1.34E+03		mg/kg	ACS-SS109	13/14	58.300-1340.000	1.34E+03			NA	NA	NO	NTX
0	Solids (total)	8.52E+01		8.52E+01		mg/kg	ACS-SA03-03	1/1	85.200-85.200	8.52E+01			NA	NA	NO	NTX
127184	Tetrachloroethene	2.70E-02		1.60E+00		mg/kg	ACS-SS101	4/14	0.027-1.600	1.60E+00		1.23E+01	NA	NA	YES	FD
108883	Toluene	3.30E-01		4.80E-01		mg/kg	ACS-SS101	2/14	0.330-0.480	4.80E-01		1.56E+04	NA	NA	YES	FD
79016	Trichloroethene	2.00E-03		2.20E-01		mg/kg	ACS-SS101	4/14	0.002-0.220	2.20E-01		5.81E+01	NA	NA	YES	FD
7440622	Vanadium	6.70E+00		1.78E+01		mg/kg	ACS-SS109	14/14	6.700-17.800	1.78E+01		5.48E+02	NA	NA	YES	FD
1330207	Xylenes (total)	6.50E-01		2.30E+01		mg/kg	ACS-SS101	2/14	0.650-23.000	2.30E+01		1.56E+05	NA	NA	YES	FD
7440666	Zinc	4.61E+01	J	1.82E+02	J	mg/kg	ACS-SS101	14/14	46.100-182.000	1.82E+02		2.35E+04	NA	NA	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from statistical analysis. Follow Regional guidance and provide supporting information.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Values (ARV)

Deletion Reason: Infrequent Detection (IFD) = *FD < 0.05 or 1/20 (EPA, 1989)*
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CNO-4A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	1.5E+000		2.1E+004	J	mg/kg	ACS-TP07-03	8/28	0.006-320.000	2.1E+004		1.6E+003			YES	FD, ARV
79005	1,1,2-Trichloroethane	1.3E-002		1.3E-002		mg/kg	SS103-AVG	1/28	0.006-8200.000	1.3E-002		1.1E+001			NO	IFD
75354	1,1-Dichloroethene	6.7E-001		6.7E-001		mg/kg	SB91-03-FT	1/28	0.006-8200.000	6.7E-001		1.1E+000			NO	IFD
95501	1,2-Dichlorobenzene	4.0E+000		4.0E+000		mg/kg	ACS-TP02-03	1/18	0.330-139.920	4.0E+000		7.0E+003			YES	FD
540590	1,2-Dichloroethene (total)	6.5E-003		1.2E-002		mg/kg	ACS-SS108	2/18	0.010-8200.000	1.2E-002		7.0E+002			YES	FD
105679	2,4-Dimethylphenol	1.2E+001		1.2E+001		mg/kg	ACS-TP02-03	1/20	0.330-139.920	1.2E+001		1.6E+003			YES	FD
91576	2-Methylnaphthalene	3.4E-001		3.0E+002		mg/kg	ACS-TP06-04	6/20	0.330-1.400	3.0E+002		1.6E+003			YES	FD
95487	2-Methylphenol	9.2E+000		9.2E+000		mg/kg	ACS-TP02-03	1/18	0.330-139.920	9.2E+000		3.9E+003			YES	FD
91941	3,3'-Dichlorobenzidine	2.1E-001		2.1E-001		mg/kg	ACS-SS101	1/20	0.340-279.840	2.1E-001		1.4E+000			YES	FD
72548	4,4'-DDD	1.5E-002		3.6E+000	P	mg/kg	SS02	2/20	0.004-73.000	3.6E+000		2.7E+000			YES	FD, ARV
72559	4,4'-DDE	1.6E-002	JP	1.6E-002	JP	mg/kg	SS01-AVG	1/20	0.004-73.000	1.6E-002		1.9E+000			YES	FD
108101	4-Methyl-2-pentanone	3.0E+000		1.5E+003	J	mg/kg	ACS-TP06-04	6/28	0.010-16000.000	1.5E+003		6.3E+003			YES	FD
106445	4-Methylphenol	1.7E+001		1.7E+001		mg/kg	ACS-TP02-03	1/20	0.330-139.920	1.7E+001		3.9E+002			YES	FD
83329	Acenaphthene	4.8E-001	J	1.1E+001		mg/kg	ACS-TP02-03	2/20	0.340-678.400	1.1E+001		4.7E+003			YES	FD
208968	Acenaphthylene	5.7E-001		5.5E+000		mg/kg	ACS-TP02-03	2/20	0.330-139.920	5.5E+000					NO	NTX
67641	Acetone	6.5E+002		6.5E+002		mg/kg	SB92-03-FT	1/27	0.010-16000.000	6.5E+002		7.8E+003			NO	IFD
7429905	Aluminum	2.0E+003		2.5E+004	J	mg/kg	ACS-SS109	20/20	NA	2.5E+004		7.8E+004			YES	FD
120127	Anthracene	2.2E-002	J	4.7E-001	J	mg/kg	SS02	4/20	0.330-139.920	4.7E-001		2.3E+004			YES	FD
7440360	Antimony	5.3E-001	J	4.7E+001	J	mg/kg	ACS-TP06-04	7/18	0.170-2.700	4.7E+001		3.1E+001			YES	FD, ARV
53469219	Aroclor-1242	3.9E-002		4.0E+002	J	mg/kg	ACS-TP02-03	6/28	0.010-360.000	4.0E+002		3.2E-001			YES	FD, ARV
12672296	Aroclor-1248	5.3E-001		7.0E+001		mg/kg	SB90-03-FT	6/28	0.010-360.000	7.0E+001		3.2E-001			YES	FD, ARV
11097691	Aroclor-1254	8.0E-002		1.0E+002	J	mg/kg	ACS-TP02-03	19/28	0.020-730.000	1.0E+002		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	2.1E-001		1.7E+000		mg/kg	SS103-AVG	2/28	0.020-730.000	1.7E+000		3.2E-001			YES	FD, ARV
7440382	Arsenic	9.6E-001	BJ	3.7E+000		mg/kg	SS02	20/20	NA	3.7E+000		4.3E-001			YES	FD, ARV
7440393	Barium	1.3E+001	B	1.6E+003		mg/kg	ACS-TP06-04	18/20	46.800-50.200	1.6E+003		5.5E+003			YES	FD
71432	Benzene	3.6E-001		7.1E+003	J	mg/kg	ACS-TP02-03	5/27	0.006-320.000	7.1E+003		2.2E+001			YES	FD, ARV
56553	Benzo(a)anthracene	4.4E-002		5.9E-002		mg/kg	ACS-SS107	2/20	0.330-139.920	5.9E-002		8.7E-001			YES	FD
50328	Benzo(a)pyrene	5.9E-002		1.8E-001	J	mg/kg	SS01-AVG	4/28	0.330-139.920	1.8E-001		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	8.2E-002		1.8E-001	J	mg/kg	SS01-AVG	4/28	0.330-139.920	1.8E-001		8.7E-001			YES	FD
191242	Benzo(g,h,i)perylene	1.8E-001	J	1.8E-001	J	mg/kg	SS01-AVG	1/28	0.330-139.920	1.8E-001					NO	IFD, NTX
207089	Benzo(k)fluoranthene	6.5E-002		1.8E-001	J	mg/kg	SS01-AVG	3/28	0.330-139.920	1.8E-001		8.7E+000			YES	FD
7440417	Beryllium	7.0E-002		5.8E+000		mg/kg	ACS-SS109	20/20	NA	5.8E+000		1.6E+002			YES	FD
111444	bis(2-Chloroethyl) ether	1.8E+000		1.8E+000		mg/kg	SB91-03-FT	1/28	0.330-139.920	1.8E+000		5.8E-001			NO	IFD
117817	bis(2-Ethylhexyl)phthalate	7.0E-002		2.6E+003		mg/kg	ACS-TP06-04	24/28	0.330-3.300	2.6E+003		4.6E+001			YES	FD, ARV
85687	Butylbenzylphthalate	1.9E-001	J	9.6E+002		mg/kg	ACS-TP06-04	6/20	0.330-1.400	9.6E+002		1.6E+004			YES	FD
7440439	Cadmium	1.3E-001	B	1.2E+002		mg/kg	ACS-TP06-04	20/20	NA	1.2E+002		7.8E+001			YES	FD, ARV
7440702	Calcium	3.7E+002	J	1.7E+005	J	mg/kg	ACS-SS109	20/20	NA	1.7E+005					NO	NTX

TABLE 2-5-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CNO-4A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
75150	Carbon Disulfide	2.0E-003		2.0E-003		mg/kg	ACS-SS112	1/20	0.010-8200.000	2.0E-003		7.8E+003			YES	FD
56235	Carbon Tetrachloride	5.3E+002	J	3.6E+003	J	mg/kg	ACS-TP07-03	2/28	0.006-8200.000	3.6E+003		4.9E+000			YES	FD, ARV
108907	Chlorobenzene	5.2E+000		1.8E+001		mg/kg	SS02	2/28	0.006-8200.000	1.8E+001		1.6E+003			YES	FD
67663	Chloroform	2.0E-003		1.0E+003	J	mg/kg	ACS-TP06-04	5/28	0.006-8200.000	1.0E+003		1.0E+002			YES	FD, ARV
16065831	Chromium (total)	5.7E+000	J	1.4E+003	J	mg/kg	ACS-TP06-04	20/20	NA	1.4E+003		1.2E+005			YES	FD
218019	Chrysene	5.9E-002		7.4E-002		mg/kg	ACS-SS109	3/28	0.330-139.920	7.4E-002		8.7E+001			YES	FD
156592	cis-1,2-Dichloroethene	2.1E-002		1.2E+003		mg/kg	SB92-03-FT	2/10	0.006-57.000	1.2E+003		7.8E+002			YES	FD, ARV
7440484	Cobalt	1.3E+000		4.2E+001		mg/kg	ACS-TP06-04	17/20	11.700-13.400	4.2E+001		4.7E+003			YES	FD
7440508	Copper	2.4E+000	BJ	3.6E+002	J	mg/kg	ACS-TP06-04	20/20	NA	3.6E+002		3.1E+003			YES	FD
57125	Cyanide (total)	7.5E-002	BJ	7.1E+001		mg/kg	ACS-TP06-04	12/20	0.340-3.300	7.1E+001		1.6E+003			YES	FD
84742	Di-n-butylphthalate	5.1E-002		6.9E+002		mg/kg	ACS-TP06-04	8/28	0.330-3.300	6.9E+002		7.8E+003			YES	FD
117840	Di-n-octylphthalate	4.9E-002		2.4E+001		mg/kg	ACS-TP06-04	3/20	0.340-139.920	2.4E+001		1.6E+003			YES	FD
132649	Dibenzofuran	4.2E+000		4.2E+000		mg/kg	ACS-TP02-03	1/20	0.330-139.920	4.2E+000		3.1E+002			YES	FD
60571	Dieldrin	1.0E-002		2.4E-001	JP	mg/kg	SS02	2/20	0.004-73.000	2.4E-001		4.0E-002			YES	FD, ARV
84662	Diethylphthalate	7.2E+000		1.0E+002		mg/kg	ACS-TP06-04	3/20	0.330-26.070	1.0E+002		6.3E+004			YES	FD
131113	Dimethylphthalate	3.5E+000		3.2E+002		mg/kg	ACS-TP06-04	4/20	0.330-19.000	3.2E+002		7.8E+005			YES	FD
72208	Endrin	1.4E-002		1.6E+000	JP	mg/kg	SS02	2/20	0.004-73.000	1.6E+000		2.3E+001			YES	FD
53494705	Endrin ketone	1.1E-002		1.1E-002		mg/kg	ACS-SS108	1/20	0.004-73.000	1.1E-002					NO	NTX
100414	Ethyl Benzene	7.7E-003		6.7E+003	J	mg/kg	ACS-TP02-03	12/28	0.006-1.200	6.7E+003		7.8E+003			YES	FD
206440	Fluoranthene	6.7E-002		3.8E+000		mg/kg	ACS-TP02-03	6/20	0.330-139.920	3.8E+000		3.1E+003			YES	FD
86737	Fluorene	6.4E-001	J	1.4E+001		mg/kg	ACS-TP02-03	2/20	0.330-139.920	1.4E+001		3.1E+003			YES	FD
57749	gamma-Chlordane	7.3E-003	J	1.2E+000	P	mg/kg	SS02	2/20	0.002-360.000	1.2E+000		1.8E+000			YES	FD
87621	Hexachlorobenzene	2.9E-002		5.9E-001		mg/kg	SB90-03-FT	2/28	0.330-139.920	5.9E-001		1.6E+002			YES	FD
87683	Hexachlorobutadiene	3.7E+000		2.2E+001		mg/kg	ACS-TP05-03	4/28	0.330-60.060	2.2E+001		8.2E+000			YES	FD, ARV
193395	Indeno(1,2,3-cd)pyrene	4.4E-002		1.8E-001	J	mg/kg	SS01-AVG	2/28	0.330-139.920	1.8E-001		8.7E-001			YES	FD
7439896	Iron	2.1E+003		1.5E+004	J	mg/kg	ACS-SS101	20/20	NA	1.5E+004		2.3E+004			YES	FD
78591	Isophorone	3.7E-002		2.6E+003		mg/kg	ACS-TP06-04	10/28	0.330-3.300	2.6E+003		6.7E+002			YES	FD, ARV
7439921	Lead	9.2E+000		6.3E+003	J	mg/kg	ACS-TP06-04	20/20	NA	6.3E+003		4.0E+002			YES	FD, ARV
1330207	m,p-xylene	1.9E-001		5.5E+003		mg/kg	SB92-03-FT	7/8	0.012-0.012	5.5E+003		1.6E+005			YES	FD
7439954	Magnesium	3.9E+002	B	3.7E+004	J	mg/kg	ACS-SS109	20/20	NA	3.7E+004					NO	NTX
7439965	Manganese	1.9E+001	J	2.5E+003		mg/kg	ACS-SS109	20/20	NA	2.5E+003		1.6E+003			YES	FD, ARV
7439976	Mercury	7.0E-002	J	1.2E+001	J	mg/kg	ACS-TP02-03	13/15	0.050-0.055	1.2E+001		**			YES	FD
75092	Methylene Chloride	2.4E+000		4.3E+002		mg/kg	SB93-03-FT	5/28	0.010-9700.000	4.3E+002		8.5E+001			YES	FD, ARV
91203	Naphthalene	5.4E-001		7.5E+002		mg/kg	ACS-TP06-04	11/28	0.330-3.300	7.5E+002		1.6E+003			YES	FD
7440020	Nickel	1.9E+000	B	2.0E+001		mg/kg	ACS-TP06-04	17/20	9.400-12.100	2.0E+001		1.6E+003			YES	FD
95476	ortho-xylene	1.3E-001		1.1E+003		mg/kg	SB92-03-FT	7/8	0.006-0.006	1.1E+003		1.6E+005			YES	FD
87865	Pentachlorophenol	4.2E+000		6.1E+001		mg/kg	ACS-TP05-03	3/26	0.860-126.400	6.1E+001		5.3E+000			YES	FD, ARV

TABLE 2-5-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CNO-4A1C.wk4

CAS Number	Chemical*	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
85018	Phenanthrene	2.1E-002	J	2.0E+001		mg/kg	ACS-TP02-03	6/20	0.340-139.920	2.0E+001					NO	NTX
108952	Phenol	2.8E+000		1.7E+002		mg/kg	ACS-TP06-04	3/20	0.330-26.070	1.7E+002		4.7E+004			YES	FD
7440097	Potassium	1.9E+002	BJ	3.7E+003	J	mg/kg	ACS-SS109	20/20	NA	3.7E+003					NO	NTX
129000	Pyrene	9.5E-002		5.9E+000		mg/kg	ACS-TP02-03	6/20	0.330-139.920	5.9E+000		2.3E+003			YES	FD
7782492	Selenium	4.2E-001	J	2.8E+000		mg/kg	ACS-TP06-04	4/20	0.340-1.700	2.8E+000		3.9E+002			YES	FD
7440224	Silver	1.8E-001	J	1.8E+000	B	mg/kg	SS02	5/20	0.170-3.200	1.8E+000		3.9E+002			YES	FD
7440235	Sodium	5.8E+001		1.3E+003		mg/kg	ACS-SS109	16/20	234.000-303.000	1.3E+003					NO	NTX
	Solids (total)	8.3E-002		8.5E+001		mg/kg	ACS-SA03-03	13/13	NA	8.5E+001					NO	NTX
100425	Styrene	2.6E-001		9.0E+001	J	mg/kg	ACS-TP07-03	3/28	0.006-8200.000	9.0E+001		1.6E+004			YES	FD
127184	Tetrachloroethene	2.0E-003	J	5.9E+003	J	mg/kg	ACS-TP02-03	16/28	0.006-0.700	5.9E+003		1.2E+001			YES	FD, ARV
108883	Toluene	3.3E-001		2.0E+005	J	mg/kg	ACS-TP02-03	7/20	0.010-0.013	2.0E+005		1.6E+004			YES	FD, ARV
79016	Trichloroethene	2.0E-003		1.1E+003		mg/kg	SB92-03-FT	11/28	0.006-8200.000	1.1E+003		5.8E+001			YES	FD, ARV
7440622	Vanadium	3.2E+000	J	1.8E+001		mg/kg	ACS-SS109	20/20	NA	1.8E+001		5.5E+002			YES	FD
1330207	Xylenes (total)	6.5E-001		2.5E+004	J	mg/kg	ACS-TP02-03	7/20	0.010-0.013	2.5E+004		1.6E+005			YES	FD
7440666	Zinc	1.5E+001	J	2.3E+003	J	mg/kg	ACS-TP06-04	20/20	NA	2.3E+003		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** Mercury does not have oral toxicity information. It does have inhalation toxicity information.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Values (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
P = Lab Specific Qualifier
B = Detected in Blank
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	2.0E-003		2.1E+004	J	mg/kg	ACS-TP07-03	37/77	0.005-320.000	2.1E+004		1.6E+003			YES	FD, ARV
630206	1,1,2,2-Tetrachloroethane	2.0E-003		3.9E+000		mg/kg	ACS-SB11-10	4/77	0.005-224000.000	3.9E+000		2.5E+001			YES	FD
79005	1,1,2-Trichloroethane	2.0E-003		8.1E+000		mg/kg	ACS-TP04-08	6/77	0.005-8200.000	8.1E+000		1.1E+001			YES	FD
75343	1,1-Dichloroethane	2.0E-003		2.2E+001	J	mg/kg	ACS-SB16-06	8/63	0.005-8200.000	2.2E+001		7.8E+003			YES	FD
75354	1,1-Dichloroethene	6.7E-001		6.7E-001		mg/kg	SB91-03-FT	1/77	0.005-8200.000	6.7E-001		1.1E+000			NO	IFD
120821	1,2,4-Trichlorobenzene	1.2E+000		4.3E+000		mg/kg	ACS-SB17-06_5	4/60	0.330-139.920	4.3E+000		7.8E+002			YES	FD
95501	1,2-Dichlorobenzene	1.1E-001		5.3E+001		mg/kg	ACS-SB17-06_5	16/44	0.330-139.920	5.3E+001		7.0E+003			YES	FD
107062	1,2-Dichloroethane	1.0E-003		4.0E+001	J	mg/kg	ACS-SB17-06_5	5/77	0.005-8200.000	4.0E+001		7.0E+000			YES	FD, ARV
540590	1,2-Dichloroethene (total)	2.0E-003		2.4E+002	J	mg/kg	ACS-SB110-SS4-07-09'	25/61	0.005-8200.000	2.4E+002		7.0E+002			YES	FD
78875	1,2-Dichloropropane	1.0E-003		2.2E+001	J	mg/kg	ACS-TP03-09	7/77	0.005-8200.000	2.2E+001		9.4E+000			YES	FD, ARV
541731	1,3-Dichlorobenzene	1.1E-001		8.8E-001		mg/kg	ACS-SB69-08	4/44	0.330-139.920	8.8E-001		2.3E+003			YES	FD
106467	1,4-Dichlorobenzene	5.7E-001		5.2E+000		mg/kg	ACS-SB17-06_5	7/58	0.330-139.920	5.2E+000		2.7E+001			YES	FD
95954	2,4,5-Trichlorophenol	2.7E-001		2.7E-001		mg/kg	ACS-SB11-10	1/46	0.630-678.400	2.7E-001		7.8E+003			NO	IFD
120832	2,4-Dichlorophenol	8.9E-002		4.1E+000		mg/kg	ACS-SB17-06_5	3/46	0.330-139.920	4.1E+000		2.3E+002			YES	FD
105679	2,4-Dimethylphenol	7.6E-002		1.2E+001		mg/kg	ACS-TP02-03	10/46	0.330-139.920	1.2E+001		1.6E+003			YES	FD
78933	2-Butanone	1.5E-002		5.3E+002	J	mg/kg	ACS-TP03-09	18/77	0.010-16000.000	5.3E+002		4.7E+004			YES	FD
91587	2-Chloronaphthalene	1.8E+000		1.8E+000		mg/kg	ACS-SB70-08	1/46	0.330-139.920	1.8E+000		6.3E+003			NO	IFD
91576	2-Methylnaphthalene	1.5E-001		3.2E+002		mg/kg	ACS-SB70-08	24/46	0.330-1.400	3.2E+002		1.6E+003			YES	FD
95487	2-Methylphenol	4.2E-002		1.5E+001		mg/kg	ACS-SB17-06_5	10/44	0.330-139.920	1.5E+001		3.9E+003			YES	FD
91941	3,3'-Dichlorobenzidine	2.1E-001		2.1E-001		mg/kg	ACS-SS101	1/46	0.340-279.840	2.1E-001		1.4E+000			NO	IFD
72548	4,4'-DDD	1.5E-002		3.6E+000	P	mg/kg	SS02	2/52	0.004-73.000	3.6E+000		2.7E+000			NO	IFD
72559	4,4'-DDE	1.6E-002	JP	1.6E-002	JP	mg/kg	SS01-AVG	1/52	0.004-73.000	1.6E-002		1.9E+000			NO	IFD
50293	4,4'-DDT	5.0E-002		1.2E+001		mg/kg	ACS-SB17-06_5	3/51	0.004-73.000	1.2E+001		1.9E+000			YES	FD, ARV
101553	4-Bromophenyl-phenylether	2.2E+000		2.2E+000		mg/kg	ACS-SB20-07	1/46	0.330-139.920	2.2E+000					NO	IFD, NTX
108101	4-Methyl-2-pentanone	2.0E-003		1.5E+003	J	mg/kg	ACS-TP06-04	31/77	0.010-16000.000	1.5E+003		6.3E+003			YES	FD
106445	4-Methylphenol	5.9E-002		4.3E+001		mg/kg	ACS-SB17-06_5	13/46	0.330-139.920	4.3E+001		3.9E+002			YES	FD
83329	Acenaphthene	6.0E-002		1.1E+001		mg/kg	ACS-TP02-03	10/46	0.340-678.400	1.1E+001		4.7E+003			YES	FD
208968	Acenaphthylene	3.4E-001		5.5E+000		mg/kg	ACS-TP02-03	4/46	0.330-139.920	5.5E+000					NO	NTX
67641	Acetone	8.8E-002	J	6.5E+002		mg/kg	SB92-03-FT	6/76	0.010-16000.000	6.5E+002		7.8E+003			YES	FD
7429905	Aluminum	4.9E+002		2.5E+004	J	mg/kg	ACS-SS109	39/39	NA	2.5E+004		7.8E+004			YES	FD
120127	Anthracene	2.2E-002	J	1.1E+000		mg/kg	ACS-SB70-08	6/46	0.330-139.920	1.1E+000		2.3E+004			YES	FD
7440360	Antimony	5.3E-001	J	4.7E+001	J	mg/kg	ACS-TP06-04	7/22	0.170-2.700	4.7E+001		3.1E+001			YES	FD, ARV
53469219	Aroclor-1242	3.9E-002		4.0E+002	J	mg/kg	ACS-TP02-03	12/71	0.010-360.000	4.0E+002		3.2E-001			YES	FD, ARV
12672296	Aroclor-1248	5.3E-001		7.6E+001		mg/kg	ACS-SB20-07	14/71	0.010-360.000	7.6E+001		3.2E-001			YES	FD, ARV

TABLE 2-5-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wb4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
11097691	Aroclor-1254	6.0E-002		1.0E+002	J	mg/kg	ACS-TP02-03	35/71	0.020-730.000	1.0E+002		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	2.1E-001		2.2E+001		mg/kg	ACS-SB70-08	7/71	0.020-730.000	2.2E+001		3.2E-001			YES	FD, ARV
7440382	Arsenic	9.5E-001		2.1E+001		mg/kg	ACS-TP02-05	37/39	0.470-0.480	2.1E+001		4.3E-001			YES	FD, ARV
7440393	Barium	1.3E+001	B	1.6E+003		mg/kg	ACS-TP06-04	20/39	44.100-51.600	1.6E+003		5.5E+003			YES	FD
71432	Benzene	1.0E-003		7.1E+003	J	mg/kg	ACS-TP02-03	35/76	0.005-320.000	7.1E+003		2.2E+001			YES	FD, ARV
56553	Benzo(a)anthracene	4.4E-002		1.7E-001		mg/kg	ACS-SB10-05	3/46	0.330-139.920	1.7E-001		8.7E-001			YES	FD
50328	Benzo(a)pyrene	5.9E-002		1.8E-001	J	mg/kg	SS01-AVG	4/60	0.330-139.920	1.8E-001		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	8.2E-002		3.9E-001		mg/kg	ACS-SB70-08	5/60	0.330-139.920	3.9E-001		8.7E-001			YES	FD
191242	Benzo(g,h,i)perylene	1.8E-001	J	1.8E-001	J	mg/kg	SS01-AVG	1/60	0.330-139.920	1.8E-001					NO	IFD, NTX
207089	Benzo(k)fluoranthene	6.5E-002		3.9E-001		mg/kg	ACS-SB70-08	4/60	0.330-139.920	3.9E-001		8.7E+000			YES	FD
65850	Benzoic Acid	4.9E-002		1.3E+001	J	mg/kg	ACS-SB73-05	4/30	1.600-678.400	1.3E+001		3.1E+005			YES	FD
100516	Benzyl Alcohol	1.4E+000		1.4E+000		mg/kg	ACS-SB73-05	1/31	0.330-139.920	1.4E+000		2.3E+004			NO	IFD
7440417	Beryllium	7.0E-002		5.8E+000		mg/kg	ACS-SS109	38/39	0.050-0.050	5.8E+000		1.6E+002			YES	FD
111444	bis(2-Chloroethyl) ether	9.9E-002		6.4E+001		mg/kg	ACS-SB17-06_5	9/60	0.330-139.920	6.4E+001		5.8E-001			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	3.9E-002	J	2.6E+003		mg/kg	ACS-TP06-04	54/60	0.330-3.300	2.6E+003		4.6E+001			YES	FD, ARV
85687	Butylbenzylphthalate	1.9E-001	J	9.6E+002		mg/kg	ACS-TP06-04	21/46	0.330-1.400	9.6E+002		1.6E+004			YES	FD
7440439	Cadmium	5.0E-002		1.2E+002		mg/kg	ACS-TP06-04	35/39	0.040-0.050	1.2E+002		7.8E+001			YES	FD, ARV
7440702	Calcium	1.8E+002	J	1.7E+005	J	mg/kg	ACS-SS109	39/39	NA	1.7E+005					NO	NTX
75150	Carbon Disulfide	2.0E-003		2.0E-003		mg/kg	ACS-SS112	1/63	0.005-8200.000	2.0E-003		7.8E+003			NO	IFD
56235	Carbon Tetrachloride	5.3E+002	J	3.6E+003	J	mg/kg	ACS-TP07-03	2/77	0.005-8200.000	3.6E+003		4.9E+000			NO	IFD
108907	Chlorobenzene	2.0E-003		1.0E+001		mg/kg	SB91-05-FT	6/76	0.005-8200.000	1.0E+001		1.6E+003			YES	FD
75003	Chloroethane	1.2E-002		1.2E-002		mg/kg	SB-089-AVG	1/77	0.010-16000.000	1.2E-002		2.2E+002			NO	IFD
67663	Chloroform	1.0E-003		2.1E+003	J	mg/kg	ACS-TP03-09	22/77	0.005-8200.000	2.1E+003		1.0E+002			YES	FD, ARV
16065831	Chromium (total)	4.6E+000	J	1.4E+003	J	mg/kg	ACS-TP06-04	36/39	2.800-3.600	1.4E+003		1.2E+005			YES	FD
218019	Chrysene	5.9E-002		2.6E-001		mg/kg	ACS-SB70-08	5/60	0.330-139.920	2.6E-001		8.7E+001			YES	FD
156592	cis-1,2-Dichloroethene	2.1E-002		1.2E+003		mg/kg	SB92-03-FT	4/16	0.006-62.000	1.2E+003		7.8E+002			YES	FD, ARV
7440484	Cobalt	1.3E+000		4.2E+001		mg/kg	ACS-TP06-04	17/39	11.000-13.400	4.2E+001		4.7E+003			YES	FD
7440508	Copper	2.4E+000	BJ	3.6E+002	J	mg/kg	ACS-TP06-04	33/39	4.700-4.900	3.6E+002		3.1E+003			YES	FD
57125	Cyanide (total)	7.5E-002	BJ	7.1E+001		mg/kg	ACS-TP06-04	14/39	0.340-3.300	7.1E+001		1.6E+003			YES	FD
84742	Di-n-butylphthalate	5.1E-002		6.9E+002		mg/kg	ACS-TP06-04	27/60	0.330-3.300	6.9E+002		7.8E+003			YES	FD
117840	Di-n-octylphthalate	4.9E-002		2.4E+001		mg/kg	ACS-TP06-04	12/46	0.330-139.920	2.4E+001		1.6E+003			YES	FD
132649	Dibenzofuran	4.5E-001		4.2E+000		mg/kg	ACS-TP02-03	3/46	0.330-139.920	4.2E+000		3.1E+002			YES	FD
60571	Dieldrin	1.0E-002		2.4E-001	JP	mg/kg	SS02	2/52	0.004-73.000	2.4E-001		4.0E-002			NO	IFD
84662	Diethylphthalate	4.6E-002		1.0E+002		mg/kg	ACS-TP06-04	15/46	0.330-26.070	1.0E+002		6.3E+004			YES	FD

TABLE 2-5-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
131113	Dimethylphthalate	4.2E-002		3.2E+002		mg/kg	ACS-TP06-04	12/46	0.330-23.100	3.2E+002		7.8E+005			YES	FD
115297	Endosulfan I	1.2E-002		1.2E+000	J	mg/kg	ACS-SB16-06	2/52	0.002-36.000	1.2E+000		4.7E+002			NO	IFD
72208	Endrin	1.4E-002		1.6E+000	JP	mg/kg	SS02	2/52	0.004-73.000	1.6E+000		2.3E+001			NO	IFD
53494705	Endrin ketone	1.1E-002		1.1E-002		mg/kg	ACS-SS106	1/52	0.004-73.000	1.1E-002					NO	IFD, NTX
100414	Ethyl Benzene	2.0E-003		6.7E+003	J	mg/kg	ACS-TP02-03	57/77	0.005-1.200	6.7E+003		7.8E+003			YES	FD
206440	Fluoranthene	5.4E-002		3.6E+000		mg/kg	ACS-TP02-03	11/46	0.330-139.920	3.6E+000		3.1E+003			YES	FD
86737	Fluorene	1.1E-001		1.4E+001		mg/kg	ACS-TP02-03	10/46	0.330-139.920	1.4E+001		3.1E+003			YES	FD
58899	gamma-BHC	1.1E+000	J	1.1E+000	J	mg/kg	ACS-SB17-06_5	1/51	0.002-36.000	1.1E+000		4.9E-001			NO	IFD
57749	gamma-Chlordane	7.3E-003	J	1.2E+000	P	mg/kg	SS02	2/52	0.002-360.000	1.2E+000		1.8E+000			NO	IFD
118741	Hexachlorobenzene	2.9E-002		5.9E-001		mg/kg	SB90-03-FT	3/60	0.330-139.920	5.9E-001		4.0E-001			YES	FD, ARV
87683	Hexachlorobutadiene	2.1E-001		2.2E+001		mg/kg	ACS-TP05-03	11/60	0.330-60.060	2.2E+001		8.2E+000			YES	FD, ARV
193395	Indeno(1,2,3-cd)pyrene	4.4E-002		1.8E-001	J	mg/kg	SS01-AVG	2/60	0.330-139.920	1.8E-001		8.7E-001			NO	IFD
7439896	Iron	4.8E+002		1.5E+004	J	mg/kg	ACS-SS101	39/39	NA	1.5E+004		2.3E+004			YES	FD
78591	Isophorone	3.7E-002		2.6E+003		mg/kg	ACS-TP06-04	21/60	0.330-23.100	2.6E+003		6.7E+002			YES	FD, ARV
7439921	Lead	2.9E+000	J	6.3E+003	J	mg/kg	ACS-TP06-04	39/39	NA	6.3E+003					NO	NTX
1330207	m,p-xylene	1.9E-001		5.5E+003		mg/kg	SB92-03-FT	13/14	0.012-0.012	5.5E+003		1.6E+005			YES	FD
7439954	Magnesium	1.0E+002	J	3.7E+004	J	mg/kg	ACS-SS109	39/39	NA	3.7E+004					NO	NTX
7439965	Manganese	4.3E+000		2.5E+003		mg/kg	ACS-SS109	39/39	NA	2.5E+003		1.6E+003			YES	FD, ARV
7439976	Mercury	7.0E-002	J	1.2E+001	J	mg/kg	ACS-TP02-03	18/34	0.040-0.070	1.2E+001		**			YES	FD
75092	Methylene Chloride	3.1E-002		5.7E+002		mg/kg	SB93-05-FT	14/77	0.010-9700.000	5.7E+002		8.5E+001			YES	FD, ARV
86306	N-Nitrosodiphenylamine	1.3E+001		1.3E+001		mg/kg	ACS-SB17-06_5	1/60	0.330-139.920	1.3E+001		1.3E+002			NO	IFD
91203	Naphthalene	3.7E-001		8.5E+002		mg/kg	SB91-05-FT	37/60	0.330-3.300	8.5E+002		1.6E+003			YES	FD
7440020	Nickel	1.9E+000	B	2.0E+001		mg/kg	ACS-TP06-04	20/39	8.800-12.100	2.0E+001		1.6E+003			YES	FD
95476	ortho-xylene	1.2E-001		1.1E+003		mg/kg	SB92-03-FT	13/14	0.006-0.006	1.1E+003		1.6E+005			YES	FD
87865	Pentachlorophenol	1.6E-001		6.1E+001		mg/kg	ACS-TP05-03	9/58	0.860-126.400	6.1E+001		5.3E+000			YES	FD, ARV
85018	Phenanthrene	2.1E-002	J	2.0E+001		mg/kg	ACS-TP02-03	16/46	0.330-139.920	2.0E+001					NO	NTX
108952	Phenol	5.3E-002		1.7E+002		mg/kg	ACS-TP06-04	18/46	0.330-26.070	1.7E+002		4.7E+004			YES	FD
7440097	Potassium	1.8E+002		3.7E+003	J	mg/kg	ACS-SS109	39/39	NA	3.7E+003					NO	NTX
129000	Pyrene	7.9E-002		5.9E+000		mg/kg	ACS-TP02-03	10/46	0.330-139.920	5.9E+000		2.3E+003			YES	FD
7782492	Selenium	4.2E-001	J	2.6E+000		mg/kg	ACS-TP06-04	7/39	0.340-1.700	2.6E+000		3.9E+002			YES	FD
7440224	Silver	1.8E-001	J	1.8E+000	B	mg/kg	SS02	5/39	0.170-3.200	1.8E+000		3.9E+002			YES	FD
7440235	Sodium	5.8E+001		1.3E+003		mg/kg	ACS-SS109	17/39	221.000-303.000	1.3E+003					NO	NTX
	Solids (total)	7.8E-002		9.1E+001		mg/kg	ACS-SB17-06_5	37/37	NA	9.1E+001					NO	NTX
100425	Styrene	1.0E-003		9.0E+001	J	mg/kg	ACS-TP07-03	7/77	0.005-8200.000	9.0E+001		1.6E+004			YES	FD

TABLE 2-5-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
127184	Tetrachloroethene	2.0E-003	J	8.3E+003		mg/kg	ACS-SB110-SS4-07-09'	49/77	0.005-0.870	8.3E+003		1.2E+001			YES	FD, ARV
108883	Toluene	4.0E-003		2.0E+005	J	mg/kg	ACS-TP02-03	44/63	0.005-3800.000	2.0E+005		1.6E+004			YES	FD, ARV
79016	Trichloroethene	2.0E-003		2.8E+003		mg/kg	ACS-SB110-SS4-07-09'	36/77	0.005-8200.000	2.8E+003		5.8E+001			YES	FD, ARV
7440622	Vanadium	1.2E+000		2.1E+001	J	mg/kg	ACS-TP02-05	39/39	NA	2.1E+001		5.5E+002			YES	FD
1330207	Xylenes (total)	1.1E-002		2.5E+004	J	mg/kg	ACS-TP02-03	47/63	0.005-0.750	2.5E+004		1.6E+005			YES	FD
7440666	Zinc	5.3E+000		2.3E+003	J	mg/kg	ACS-TP06-04	39/39	NA	2.3E+003		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** Mercury does not have oral toxicity informaion. It does have inalation toxicity information.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1996. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Values (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
P = Lab Specific Qualifier
B = Detected in Blank
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CNO-4A2C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	3.1E-002		3.3E+004		mg/kg	SA04-O-IEA-01	2/12	0.006-0.006	3.3E+004		1.6E+003			YES	FD, ARV
75354	1,1-Dichloroethene	8.6E-003		8.6E-003		mg/kg	SB81-04-FT	1/12	0.027-13000.000	8.6E-003		1.1E+000			YES	FD
95501	1,2-Dichlorobenzene	2.1E+002		2.1E+002		mg/kg	SA04-S-IEA	1/7	1.799-36.168	2.1E+002		7.0E+003			YES	FD
105679	2,4-Dimethylphenol	8.8E+001		8.8E+001		mg/kg	SA04-S-IEA	1/7	1.799-36.168	8.8E+001		1.6E+003			YES	FD
78933	2-Butanone	2.8E+001		6.4E+004		mg/kg	SA04-O-IEA-01	7/12	0.054-67.000	6.4E+004		4.7E+004			YES	FD, ARV
591786	2-Hexanone	9.1E+001		9.1E+001		mg/kg	SA04-S-IEA	1/11	0.054-25000.000	9.1E+001		3.1E+003			YES	FD
91576	2-Methylnaphthalene	1.6E+001		5.8E+001		mg/kg	SA02-S-IEA	2/7	1.799-40.590	5.8E+001		1.6E+003			YES	FD
95487	2-Methylphenol	1.2E+002		1.2E+002		mg/kg	SA04-S-IEA	1/7	1.799-36.168	1.2E+002		3.9E+003			YES	FD
108101	4-Methyl-2-pentanone	1.5E+001		6.5E+003		mg/kg	SA02-O-IEA-02	5/12	0.054-25000.000	6.5E+003		6.3E+003			YES	FD, ARV
106445	4-Methylphenol	1.8E+002		1.8E+002		mg/kg	SA04-S-IEA	1/7	1.799-36.168	1.8E+002		3.9E+002			YES	FD
67641	Acetone	1.2E+003		2.5E+005		mg/kg	SA04-O-IEA-02	3/12	0.120-130000.000	2.5E+005		7.8E+003			YES	FD, ARV
7429905	Aluminum	2.7E+003		8.2E+003		mg/kg	D01-S-IEA	7/7	NA	8.2E+003		7.8E+004			YES	FD
7440360	Antimony	1.3E+001		1.6E+002		mg/kg	D01-S-IEA	3/7	6.440-7.430	1.6E+002		3.1E+001			YES	FD, ARV
12672296	Aroclor-1248	9.4E+000		3.3E+002		mg/kg	SA04-S-IEA	4/8	0.010-12.064	3.3E+002		3.2E-001			YES	FD, ARV
11097691	Aroclor-1254	4.7E+000		4.7E+000		mg/kg	T12-S-IEA	1/8	0.020-43.520	4.7E+000		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	2.0E+001		6.2E+001		mg/kg	SA02-S-IEA	3/8	0.020-39.360	6.2E+001		3.2E-001			YES	FD, ARV
7440382	Arsenic	2.3E+000		7.8E+000		mg/kg	D02-S-IEA	7/7	NA	7.8E+000		4.3E-001			YES	FD, ARV
7440393	Barium	3.1E+001		2.7E+003		mg/kg	D01-S-IEA	7/7	NA	2.7E+003		5.5E+003			YES	FD
71432	Benzene	4.5E+001		8.9E+004		mg/kg	SA04-O-IEA-01	2/12	0.006-6200.000	8.9E+004		2.2E+001			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	9.3E+000		2.4E+002		mg/kg	SA02-S-IEA	5/8	0.330-40.590	2.4E+002		4.6E+001			YES	FD, ARV
7440439	Cadmium	8.3E-001		1.1E+002		mg/kg	D01-S-IEA	7/7	NA	1.1E+002		7.8E+001			YES	FD, ARV
7440702	Calcium	4.3E+003		2.6E+004		mg/kg	SA01-S-IEA-02	7/7	NA	2.6E+004					NO	NTX
67663	Chloroform	3.1E+004		3.1E+004		mg/kg	SA04-O-IEA-01	1/12	0.006-6200.000	3.1E+004		1.0E+002			YES	FD, ARV
16065831	Chromium (total)	1.0E+001		1.5E+003		mg/kg	D01-S-IEA	7/7	NA	1.5E+003		1.2E+005			YES	FD
156592	cis-1,2-Dichloroethene	1.6E-002		1.4E-001		mg/kg	T12-S-IEA	2/12	1.400-13000.000	1.4E-001		7.8E+002			YES	FD
7440484	Cobalt	5.6E+000		3.3E+001		mg/kg	D01-S-IEA	3/7	5.540-6.420	3.3E+001		4.7E+003			YES	FD
7440508	Copper	3.6E+001		1.3E+003		mg/kg	SA02-S-IEA	7/7	NA	1.3E+003		3.1E+003			YES	FD
84742	Di-n-butylphthalate	1.1E+001		8.4E+001		mg/kg	SA02-S-IEA	3/8	0.330-40.590	8.4E+001		7.8E+003			YES	FD
131113	Dimethylphthalate	1.1E+002		1.1E+002		mg/kg	SA02-S-IEA	1/7	1.799-40.590	1.1E+002		7.8E+005			YES	FD
100414	Ethyl Benzene	1.1E-002		7.8E+003		mg/kg	SA02-O-IEA-02	8/12	0.027-6200.000	7.8E+003		7.8E+003			YES	FD
7439896	Iron	7.6E+002		1.9E+004		mg/kg	D01-S-IEA	7/7	NA	1.9E+004		2.3E+004			YES	FD
78591	Isophorone	6.7E+001		2.1E+002		mg/kg	SA02-S-IEA	2/8	0.330-40.590	2.1E+002		6.7E+002			YES	FD
7439921	Lead	6.0E+001		1.0E+004		mg/kg	D01-S-IEA	7/7	NA	1.0E+004					NO	NTX
1330207	m,p-xylene	3.2E-002		3.2E-002		mg/kg	SB81-04-FT	1/1	NA	3.2E-002		1.6E+005			YES	FD
7439954	Magnesium	1.3E+003		1.2E+004		mg/kg	SA01-S-IEA-02	7/7	NA	1.2E+004					NO	NTX
7439965	Manganese	1.0E+002		4.0E+002		mg/kg	D01-S-IEA	7/7	NA	4.0E+002		1.6E+003			YES	FD

TABLE 2-5-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A2C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439976	Mercury	3.2E-001		7.9E+000		mg/kg	SA02-S-IEA	6/7	0.111-0.111	7.9E+000					YES	NTX
75092	Methylene Chloride	2.0E-002		2.0E-002		mg/kg	SB81-04-FT	1/12	0.054-25000.000	2.0E-002		8.5E+001			YES	FD
91203	Naphthalene	1.6E+001		1.4E+002		mg/kg	SA02-S-IEA	3/8	0.330-40.590	1.4E+002		1.6E+003			YES	FD
7440020	Nickel	4.6E+000		5.3E+001		mg/kg	D01-S-IEA	7/7	NA	5.3E+001		1.6E+003			YES	FD
95476	ortho-xylene	1.2E-002		1.2E-002		mg/kg	SB81-04-FT	1/1	NA	1.2E-002		1.6E+005			YES	FD
108952	Phenol	1.7E+002		1.7E+002		mg/kg	SA04-S-IEA	1/7	1.799-36.168	1.7E+002		4.7E+004			YES	FD
7440097	Potassium	6.6E+002		1.6E+003		mg/kg	SA01-S-IEA-02	2/7	554.000-703.000	1.6E+003					NO	NTX
7782492	Selenium	6.4E-001		8.3E+000		mg/kg	D01-S-IEA	3/7	0.537-0.642	8.3E+000		3.9E+002			YES	FD
7440224	Silver	3.8E+000		3.5E+001		mg/kg	D01-S-IEA	2/7	1.070-1.280	3.5E+001		3.9E+002			YES	FD
7440235	Sodium	7.4E+002		1.2E+003		mg/kg	D01-S-IEA	2/7	537.000-703.000	1.2E+003					NO	NTX
	Solids (total)	6.1E-002		6.1E-002		mg/kg	SB81-04-FT	1/1	NA	6.1E-002					NO	NTX
127184	Tetrachloroethene	1.0E+000		4.7E+004		mg/kg	SA04-O-IEA-01	8/12	0.008-6200.000	4.7E+004		1.2E+001			YES	FD, ARV
108883	Toluene	8.2E-002		2.6E+005		mg/kg	SA04-O-IEA-01	10/11	6200.000-6200.00	2.6E+005		1.6E+004			YES	FD, ARV
79016	Trichloroethene	1.1E+000		3.5E+002		mg/kg	SA04-S-IEA	3/12	0.008-13000.000	3.5E+002		5.8E+001			YES	FD, ARV
7440622	Vanadium	6.7E+000		1.2E+001		mg/kg	SA04-S-IEA	6/7	7.030-7.030	1.2E+001		5.5E+002			YES	FD
1330207	Xylenes (total)	8.0E-001		2.8E+005		mg/kg	SA04-O-IEA-01	10/11	6200.000-6200.00	2.8E+005		1.6E+005			YES	FD, ARV
7440666	Zinc	1.0E+002		8.3E+003		mg/kg	D01-S-IEA	7/7	NA	8.3E+003		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** *Mercury does not have oral toxicity information. It does have inhalation toxicity information.*

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 22, 1997.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)
Below Screening Level (BSL)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	2.7E-002		6.5E+001		mg/kg	ACS-SB38-10	8/28	0.005-42.000	6.5E+001		1.6E+003			YES	FD
79345	1,1,2,2-Tetrachloroethane	1.3E-002		3.6E-002		mg/kg	SB82-04_5-FT	2/28	0.005-49.600	3.6E-002		3.2E+000			YES	FD
79005	1,1,2-Trichloroethane	6.6E+001		6.6E+001		mg/kg	ACS-SB39-10	1/28	0.005-49.600	6.6E+001		1.1E+001			NO	IFD
75343	1,1-Dichloroethane	3.6E-002		1.3E+001		mg/kg	ACS-SB39-10	3/15	0.005-49.600	1.3E+001		7.8E+003			YES	FD
75354	1,1-Dichloroethene	8.6E-003		8.6E-003		mg/kg	SB81-04-FT	1/28	0.005-49.600	8.6E-003		1.1E+000			NO	IFD
120821	1,2,4-Trichlorobenzene	1.8E+000		1.0E+001		mg/kg	ACS-SB38-10	4/26	0.330-78.870	1.0E+001		7.8E+002			YES	FD
95501	1,2-Dichlorobenzene	5.3E+000		2.1E+002		mg/kg	SA04-S-IEA	5/13	0.330-78.870	2.1E+002		7.0E+003			YES	FD
107062	1,2-Dichloroethane	1.1E-001		1.8E+001		mg/kg	ACS-SB28-08	3/28	0.005-42.000	1.8E+001		7.0E+000			YES	FD, ARV
540590	1,2-Dichloroethene (total)	5.0E-003		3.4E+001		mg/kg	ACS-SB28-08	3/8	0.005-41.000	3.4E+001		7.0E+002			YES	FD
78875	1,2-Dichloropropane	1.0E-003		2.7E+000		mg/kg	ACS-SB39-10	5/28	0.005-49.600	2.7E+000		9.4E+000			YES	FD
106467	1,4-Dichlorobenzene	3.6E-001		9.1E-001		mg/kg	ACS-SB38-10	2/26	0.330-78.870	9.1E-001		2.7E+001			YES	FD
105679	2,4-Dimethylphenol	1.1E+001		8.8E+001		mg/kg	SA04-S-IEA	4/13	0.330-78.870	8.8E+001		1.6E+003			YES	FD
606202	2,6-Dinitrotoluene	3.5E+000		3.5E+000		mg/kg	ACS-SB38-10	1/13	1.600-382.400	3.5E+000		7.8E+001			YES	FD
78933	2-Butanone	1.4E+000		4.5E+003		mg/kg	ACS-SB04-05	9/28	0.010-99.200	4.5E+003		4.7E+004			YES	FD
591786	2-Hexanone	1.6E+001		9.1E+001		mg/kg	SA04-S-IEA	2/15	0.010-99.200	9.1E+001		3.1E+003			YES	FD
91576	2-Methylnaphthalene	1.7E-001		5.2E+002		mg/kg	ACS-SB39-10	7/13	1.799-78.870	5.2E+002		1.6E+003			YES	FD
95487	2-Methylphenol	6.7E+000		1.2E+002		mg/kg	SA04-S-IEA	5/13	0.330-78.870	1.2E+002		3.9E+003			YES	FD
72548	4,4'-DDD	3.3E+000		3.3E+000		mg/kg	ACS-SB36-10	1/15	0.016-5.744	3.3E+000		2.7E+000			YES	FD, ARV
72559	4,4'-DDE	8.8E-001		8.8E-001		mg/kg	ACS-SB36-10	1/15	0.016-5.744	8.8E-001		1.9E+000			YES	FD
50293	4,4'-DDT	1.7E+000		1.7E+000		mg/kg	ACS-SB38-10	1/15	0.016-5.744	1.7E+000		1.9E+000			YES	FD
108101	4-Methyl-2-pentanone	1.4E+000		3.6E+002		mg/kg	SA02-S-IEA	9/28	0.010-82.000	3.6E+002		6.3E+003			YES	FD
106445	4-Methylphenol	1.4E+001		1.8E+002		mg/kg	SA04-S-IEA	5/13	0.330-78.870	1.8E+002		3.9E+002			YES	FD
83329	Acenaphthene	1.5E-001		1.5E+001		mg/kg	ACS-SB39-10	4/13	1.799-382.400	1.5E+001		4.7E+003			YES	FD
67641	Acetone	1.7E+000		1.2E+003		mg/kg	SA04-S-IEA	6/28	0.002-420.000	1.2E+003		7.8E+003			YES	FD
309002	Aldrin	7.7E+000		7.7E+000		mg/kg	ACS-SB39-10	1/15	0.008-2.176	7.7E+000		3.8E-002			YES	FD, ARV
319846	alpha-BHC	3.3E-001		3.3E-001		mg/kg	ACS-SB36-10	1/15	0.008-2.872	3.3E-001		1.0E-001			YES	FD, ARV
7429905	Aluminum	1.4E+002		8.2E+003		mg/kg	D01-S-IEA	11/11	NA	8.2E+003		7.8E+004			YES	FD
120127	Anthracene	2.3E-001		1.3E+000		mg/kg	ACS-SB36-10	2/13	1.799-78.870	1.3E+000		2.3E+004			YES	FD
7440360	Antimony	1.3E+001		1.6E+002		mg/kg	D01-S-IEA	3/8	1.400-7.430	1.6E+002		3.1E+001			YES	FD, ARV
53469219	Aroclor-1242	8.7E+000		8.7E+000		mg/kg	ACS-SB40-10	1/28	0.010-500.000	8.7E+000		3.2E-001			NO	IFD
12672296	Aroclor-1248	9.4E+000		3.3E+002		mg/kg	SA04-S-IEA	4/28	0.010-500.000	3.3E+002		3.2E-001			YES	FD, ARV
11097691	Aroclor-1254	2.2E-002		3.6E+001		mg/kg	ACS-SB37-10	11/28	0.020-1000.000	3.6E+001		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	3.6E-002		3.4E+003		mg/kg	SB76-07-FT	13/28	0.020-57.440	3.4E+003		3.2E-001			YES	FD, ARV
7440382	Arsenic	2.3E+000		7.8E+000		mg/kg	D02-S-IEA	10/11	0.540-0.540	7.8E+000		4.3E-001			YES	FD, ARV
7440393	Barium	3.1E+001		2.7E+003		mg/kg	D01-S-IEA	7/11	45.300-55.200	2.7E+003		5.5E+003			YES	FD
71432	Benzene	1.0E-002		9.6E+001		mg/kg	ACS-SB39-10	13/28	0.006-49.600	9.6E+001		2.2E+001			YES	FD, ARV
56553	Benzo(a)anthracene	4.7E-001		2.7E+000		mg/kg	ACS-SB38-10	2/13	1.799-78.870	2.7E+000		8.7E-001			YES	FD, ARV

TABLE 2-5-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
50328	Benzo(a)pyrene	3.8E-001		1.5E+000		mg/kg	ACS-SB38-10	2/26	0.330-78.870	1.5E+000		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	7.6E-001		5.3E+000		mg/kg	ACS-SB38-10	2/26	0.330-78.870	5.3E+000		8.7E-001			YES	FD, ARV
191242	Benzo(g,h,i)perylene	2.3E-001		1.5E+000		mg/kg	ACS-SB38-10	2/26	0.330-78.870	1.5E+000					NO	NTX
207089	Benzo(k)fluoranthene	7.6E-001		5.3E+000		mg/kg	ACS-SB38-10	2/26	0.330-78.870	5.3E+000		8.7E+000			YES	FD
65850	Benzoic Acid	2.3E-001		2.4E+002		mg/kg	ACS-SB39-10	5/13	8.720-196.800	2.4E+002		3.1E+005			YES	FD
100516	Benzyl Alcohol	1.5E+000		3.4E+001		mg/kg	ACS-SB39-10	2/13	0.330-81.180	3.4E+001		2.3E+004			YES	FD
7440417	Beryllium	1.0E-001		3.4E-001		mg/kg	ACS-SB42-05_5	3/11	0.050-0.703	3.4E-001		1.6E+002			YES	FD
319857	beta-BHC	8.0E-001		8.0E-001		mg/kg	ACS-SB38-10	1/15	0.008-2.872	8.0E-001		3.5E-001			YES	FD, ARV
111444	bis(2-Chloroethyl) ether	1.9E+001		1.1E+002		mg/kg	ACS-SB39-10	3/26	0.330-78.870	1.1E+002		5.8E-001			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	1.2E+000		2.3E+003		mg/kg	ACS-SB39-10	14/26	0.330-40.590	2.3E+003		4.6E+001			YES	FD, ARV
85687	Butylbenzylphthalate	1.8E-001		4.2E+002		mg/kg	ACS-SB39-10	5/13	1.799-78.870	4.2E+002		1.6E+004			YES	FD
7440439	Cadmium	3.0E-001		1.1E+002		mg/kg	D01-S-IEA	10/10	NA	1.1E+002		7.8E+001			YES	FD, ARV
7440702	Calcium	4.1E+002		5.1E+004		mg/kg	ACS-SB42-05_5	10/11	341.000-341.000	5.1E+004					NO	NTX
108907	Chlorobenzene	2.5E+001		2.5E+001		mg/kg	ACS-SB39-10	1/28	0.005-49.600	2.5E+001		1.6E+003			NO	IFD
67663	Chloroform	7.0E-003		1.4E+002		mg/kg	ACS-SB39-10	8/28	0.005-49.600	1.4E+002		1.0E+002			YES	FD, ARV
16065831	Chromium (total)	1.0E+001		1.5E+003		mg/kg	D01-S-IEA	10/11	1.800-1.800	1.5E+003		1.2E+005			YES	FD
218019	Chrysene	4.0E-001		3.8E+000		mg/kg	ACS-SB39-10	3/26	0.330-78.870	3.8E+000		8.7E+001			YES	FD
156592	cis-1,2-Dichloroethene	1.8E-002		2.3E-001		mg/kg	SB62-06_5-FT	5/20	0.006-42.000	2.3E-001		7.8E+002			YES	FD
7440484	Cobalt	5.6E+000		3.3E+001		mg/kg	D01-S-IEA	3/11	5.540-13.800	3.3E+001		4.7E+003			YES	FD
7440508	Copper	2.2E+001		1.3E+003		mg/kg	SA02-S-IEA	10/11	5.400-5.400	1.3E+003		3.1E+003			YES	FD
84742	Di-n-butylphthalate	1.1E-001		3.9E+002		mg/kg	ACS-SB39-10	9/26	0.330-78.870	3.9E+002		7.8E+003			YES	FD
117840	Di-n-octylphthalate	3.7E+000		1.3E+001		mg/kg	ACS-SB38-10	4/13	0.330-78.870	1.3E+001		1.6E+003			YES	FD
53703	Dibenzo(a,h)anthracene	7.0E-002		7.0E-002		mg/kg	ACS-SB42-05_5	1/26	0.330-78.870	7.0E-002		8.7E-002			NO	IFD
132649	Dibenzofuran	1.7E-001		2.5E+000		mg/kg	ACS-SB38-10	3/13	1.799-78.870	2.5E+000		3.1E+002			YES	FD
84662	Diethylphthalate	6.6E+000		6.4E+001		mg/kg	ACS-SB39-10	4/13	0.330-78.870	6.4E+001		6.3E+004			YES	FD
131113	Dimethylphthalate	3.8E+000		2.6E+002		mg/kg	ACS-SB39-10	3/13	0.330-78.870	2.6E+002		7.8E+005			YES	FD
100414	Ethyl Benzene	4.0E-003		6.8E+002		mg/kg	SA02-S-IEA	18/28	0.006-35.000	6.8E+002		7.8E+003			YES	FD
206440	Fluoranthene	3.9E-001		4.1E+000		mg/kg	ACS-SB38-10	4/13	1.799-78.870	4.1E+000		3.1E+003			YES	FD
86737	Fluorene	2.9E-001		1.8E+001		mg/kg	ACS-SB39-10	4/13	1.799-78.870	1.8E+001		3.1E+003			YES	FD
118741	Hexachlorobenzene	9.3E-001		9.3E-001		mg/kg	ACS-SB38-10	1/26	0.330-78.870	9.3E-001		4.0E-001			NO	IFD
87683	Hexachlorobutadiene	2.0E+001		6.0E+001		mg/kg	ACS-SB39-10	2/26	0.330-78.870	6.0E+001		8.2E+000			YES	FD, ARV
193395	Indeno(1,2,3-cd)pyrene	4.2E-001		1.4E+000		mg/kg	ACS-SB38-10	2/26	0.330-78.870	1.4E+000		8.7E-001			YES	FD, ARV
7439896	Iron	7.8E+002		1.9E+004		mg/kg	D01-S-IEA	11/11	NA	1.9E+004		2.3E+004			YES	FD
78591	Isophorone	1.2E+001		1.8E+003		mg/kg	ACS-SB39-10	6/26	0.330-78.870	1.8E+003		6.7E+002			YES	FD, ARV
7439921	Lead	2.3E+000	J	1.0E+004		mg/kg	D01-S-IEA	11/11	NA	1.0E+004					NO	NTX
1330207	m,p-xylene	1.4E-002		4.9E+000		mg/kg	SB78-10-FT	9/13	0.012-0.017	4.9E+000		1.6E+005			YES	FD
7439954	Magnesium	3.9E+002		1.9E+004		mg/kg	ACS-SB42-05_5	10/11	153.000-153.000	1.9E+004					NO	NTX

TABLE 2-5-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439965	Manganese	1.3E+001	J	4.0E+002		mg/kg	D01-S-IEA	11/11	NA	4.0E+002		1.6E+003			YES	FD
7439976	Mercury	1.6E-001		7.9E+000		mg/kg	SA02-S-IEA	8/11	0.050-0.111	7.9E+000					YES	FD
75092	Methylene Chloride	2.0E-002		6.8E+001		mg/kg	ACS-SB40-10	12/28	0.010-82.000	6.8E+001		8.5E+001			YES	FD
86306	N-Nitrosodiphenylamine	6.9E+000		6.9E+000		mg/kg	ACS-SB28-08	1/26	0.330-78.870	6.9E+000		1.3E+002			NO	IFD
91203	Naphthalene	2.8E-001		4.9E+002		mg/kg	ACS-SB39-10	9/26	0.330-78.870	4.9E+002		1.6E+003			YES	FD
7440020	Nickel	4.6E+000		5.5E+001		mg/kg	ACS-SB42-05_5	8/11	9.200-11.000	5.5E+001		1.6E+003			YES	FD
95476	ortho-xylene	1.2E-002		2.5E+000		mg/kg	SB78-10-FT	6/13	0.006-0.006	2.5E+000		1.6E+005			YES	FD
87865	Pentachlorophenol	1.2E+000		6.3E+001		mg/kg	ACS-SB39-10	3/26	1.600-382.400	6.3E+001		5.3E+000			YES	FD, ARV
85018	Phenanthrene	7.6E-001		2.1E+001		mg/kg	ACS-SB39-10	5/13	1.799-78.870	2.1E+001					NO	NTX
108952	Phenol	1.2E+001		1.7E+002		mg/kg	SA04-S-IEA	5/13	0.330-78.870	1.7E+002		4.7E+004			YES	FD
7440097	Potassium	3.5E+001	J	1.6E+003		mg/kg	SA01-S-IEA-02	6/11	554.000-703.000	1.6E+003					NO	NTX
129000	Pyrene	7.1E-001		6.0E+000		mg/kg	ACS-SB38-10	3/13	1.799-78.870	6.0E+000		2.3E+003			YES	FD
7782492	Selenium	6.4E-001		8.3E+000		mg/kg	D01-S-IEA	3/11	0.450-0.642	8.3E+000		3.9E+002			YES	FD
7440224	Silver	3.8E+000		3.5E+001		mg/kg	D01-S-IEA	2/11	1.070-2.800	3.5E+001		3.9E+002			YES	FD
7440235	Sodium	7.4E+002		1.2E+003		mg/kg	D01-S-IEA	2/11	226.000-703.000	1.2E+003					NO	NTX
	Solids (total)	6.0E-002		8.8E+001		mg/kg	ACS-SB42-05_5	17/17	NA	8.8E+001					NO	NTX
100425	Styrene	3.0E-002		5.2E+001		mg/kg	ACS-SB40-10	2/28	0.005-49.600	5.2E+001		1.6E+004			YES	FD
127184	Tetrachloroethene	2.2E-002		8.8E+002		mg/kg	SA04-S-IEA	13/28	0.005-5.500	8.8E+002		1.2E+001			YES	FD, ARV
7440280	Thallium	1.0E+000		1.4E+000		mg/kg	ACS-SB42-05_5	2/11	0.690-1.410	1.4E+000		5.5E+000			YES	FD
108883	Toluene	5.2E-002		1.3E+003		mg/kg	ACS-SB39-10	15/15	NA	1.3E+003		1.6E+004			YES	FD
79016	Trichloroethene	1.2E-002		3.5E+002		mg/kg	SA04-S-IEA	10/28	0.005-35.000	3.5E+002		5.8E+001			YES	FD, ARV
7440622	Vanadium	6.7E+000		1.2E+001		mg/kg	SA04-S-IEA	9/11	1.600-7.030	1.2E+001		5.5E+002			YES	FD
75014	Vinyl Chloride	9.3E-003		1.1E-001		mg/kg	SB82-06_5-FT	3/28	0.006-99.200	1.1E-001		3.4E-001			YES	FD
1330207	Xylenes (total)	3.0E-003		3.6E+003		mg/kg	SA02-S-IEA	15/15	NA	3.6E+003		1.6E+005			YES	FD
7440666	Zinc	7.8E+000		8.3E+003		mg/kg	D01-S-IEA	11/11	NA	8.3E+003		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** Mercury does not have oral toxicity information. It does have inhalation toxicity information.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Values (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services Site

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil, 0 to 2 feet
Exposure Point:	Soil

File: SS-A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	9.0E-003		9.0E-003		mg/kg	ACS-SA01-03	1/2	0.225-0.225	9.0E-003		1.6E+003			YES	FD
75343	1,1-Dichloroethane	8.6E-002		8.6E-002		mg/kg	ACS-SA01-03	1/2	0.225-0.225	8.6E-002		7.8E+003			YES	FD
95501	1,2-Dichlorobenzene	5.9E-001		5.9E-001		mg/kg	ACS-SA02-03	1/2	0.660-0.660	5.9E-001		7.0E+003			YES	FD
540590	1,2-Dichloroethene (total)	2.1E-002		7.6E+000		mg/kg	ACS-SA02-03	2/2	NA	7.6E+000		7.0E+002			YES	FD
78875	1,2-Dichloropropane	1.9E-002		1.9E-002		mg/kg	ACS-SA01-03	1/2	0.225-0.225	1.9E-002		9.4E+000			YES	FD
95954	2,4,5-Trichlorophenol	1.7E-001		1.7E-001		mg/kg	ACS-SA01-03	1/2	19.200-19.200	1.7E-001		7.8E+003			YES	FD
105679	2,4-Dimethylphenol	1.3E+000		4.9E+000		mg/kg	ACS-SA02-03	2/2	NA	4.9E+000		1.6E+003			YES	FD
91576	2-Methylnaphthalene	5.5E+000		1.7E+001		mg/kg	ACS-SA02-03	2/2	NA	1.7E+001		1.6E+003			YES	FD
95487	2-Methylphenol	4.7E+000		4.7E+000		mg/kg	ACS-SA02-03	1/2	0.660-0.660	4.7E+000		3.9E+003			YES	FD
72548	4,4'-DDD	2.5E-002		1.5E-001		mg/kg	ACS-SB46-01	3/14	0.016-1.760	1.5E-001		2.7E+000			YES	FD
106445	4-Methylphenol	4.6E+000		4.6E+000		mg/kg	ACS-SA02-03	1/2	0.660-0.660	4.6E+000		3.9E+002			YES	FD
83329	Acenaphthene	3.6E-001		3.6E-001		mg/kg	ACS-SA01-03	1/2	19.200-19.200	3.6E-001		4.7E+003			YES	FD
67641	Acetone	1.3E-001		1.3E-001		mg/kg	ACS-SA01-03	1/2	0.450-0.450	1.3E-001		7.8E+003			YES	FD
7429905	Aluminum	4.7E+003		9.5E+003		mg/kg	ACS-SA01-03	2/2	NA	9.5E+003		7.8E+004			YES	FD
120127	Anthracene	6.6E-001		6.6E-001		mg/kg	ACS-SA01-03	1/2	3.960-3.960	6.6E-001		2.3E+004			YES	FD
7440360	Antimony	3.7E+001	J	6.8E+001	J	mg/kg	ACS-SA02-03	2/2	NA	6.8E+001		3.1E+001			YES	FD, ARV
53469219	Aroclor-1242	1.5E+001		4.2E+001		mg/kg	ACS-SA01-03	3/14	0.080-8.800	4.2E+001		3.2E-001			YES	FD, ARV
12672296	Aroclor-1248	5.1E+000		2.7E+001		mg/kg	ACS-SB48-01	3/14	0.080-8.800	2.7E+001		3.2E-001			YES	FD, ARV
11097691	Aroclor-1254	2.0E+000		2.2E+001		mg/kg	ACS-SB48-01	5/14	0.160-17.600	2.2E+001		3.2E-001			YES	FD, ARV
7440382	Arsenic	4.4E+000		3.1E+001		mg/kg	ACS-SA02-03	2/2	NA	3.1E+001		4.3E-001			YES	FD, ARV
7440393	Barium	1.8E+003		2.5E+003		mg/kg	ACS-SA01-03	2/2	NA	2.5E+003		5.5E+003			YES	FD
71432	Benzene	3.2E-001		3.2E+000		mg/kg	ACS-SA02-03	2/2	NA	3.2E+000		2.2E+001			YES	FD
56553	Benzo(a)anthracene	2.4E+000		2.4E+000		mg/kg	ACS-SA01-03	1/2	3.960-3.960	2.4E+000		8.7E-001			YES	FD, ARV
205992	Benzo(b)fluoranthene	4.3E-001		4.3E-001		mg/kg	ACS-SA01-03	1/2	3.960-3.960	4.3E-001		8.7E-001			YES	FD
207089	Benzo(k)fluoranthene	4.3E-001		4.3E-001		mg/kg	ACS-SA01-03	1/2	3.960-3.960	4.3E-001		8.7E+000			YES	FD
7440417	Beryllium	1.6E-001		1.5E+000		mg/kg	ACS-SA01-03	2/2	NA	1.5E+000		1.6E+002			YES	FD
117817	bis(2-Ethylhexyl)phthalate	2.9E+002		4.3E+002		mg/kg	ACS-SA01-03	2/2	NA	4.3E+002		4.6E+001			YES	FD, ARV
85687	Butylbenzylphthalate	3.2E+000		1.7E+001		mg/kg	ACS-SA02-03	2/2	NA	1.7E+001		1.6E+004			YES	FD
7440439	Cadmium	1.2E+002	J	1.6E+002	J	mg/kg	ACS-SA02-03	2/2	NA	1.6E+002		7.8E+001			YES	FD, ARV
7440702	Calcium	1.9E+004	J	1.6E+005	J	mg/kg	ACS-SA01-03	2/2	NA	1.6E+005					NO	NTX
108907	Chlorobenzene	6.2E+000		6.2E+000		mg/kg	ACS-SA02-03	1/2	0.030-0.030	6.2E+000		1.6E+003			YES	FD
67663	Chloroform	1.0E-002		1.0E-002		mg/kg	ACS-SA01-03	1/2	0.225-0.225	1.0E-002		1.0E+002			YES	FD

TABLE 2-5-6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services Site

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil, 0 to 2 feet
Exposure Point:	Soil

File: SS-A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	9.0E-003		9.0E-003		mg/kg	ACS-SA01-03	1/2	0.225-0.225	9.0E-003		1.6E+003			YES	FD
75343	1,1-Dichloroethane	8.6E-002		8.6E-002		mg/kg	ACS-SA01-03	1/2	0.225-0.225	8.6E-002		7.8E+003			YES	FD
95501	1,2-Dichlorobenzene	5.9E-001		5.9E-001		mg/kg	ACS-SA02-03	1/2	0.660-0.660	5.9E-001		7.0E+003			YES	FD
16065831	Chromium (total)	8.6E+002		1.3E+003		mg/kg	ACS-SA02-03	2/2	NA	1.3E+003		1.2E+005			YES	FD
218019	Chrysene	1.3E+000		1.3E+000		mg/kg	ACS-SA01-03	1/2	3.960-3.960	1.3E+000		8.7E+001			YES	FD
7440484	Cobalt	4.2E+001		5.7E+001		mg/kg	ACS-SA01-03	2/2	NA	5.7E+001		4.7E+003			YES	FD
7440508	Copper	3.8E+002	J	1.2E+003	J	mg/kg	ACS-SA01-03	2/2	NA	1.2E+003		3.1E+003			YES	FD
57125	Cyanide (total)	2.0E+001		4.8E+001		mg/kg	ACS-SA02-03	2/2	NA	4.8E+001		1.6E+003			YES	FD
84742	Di-n-butylphthalate	1.1E+001		1.5E+001		mg/kg	ACS-SA02-03	2/2	NA	1.5E+001		7.8E+003			YES	FD
117840	Di-n-octylphthalate	1.3E+000		1.3E+000		mg/kg	ACS-SA02-03	1/2	0.660-0.660	1.3E+000		1.6E+003			YES	FD
132649	Dibenzofuran	4.3E-001		4.3E-001		mg/kg	ACS-SA01-03	1/2	3.960-3.960	4.3E-001		3.1E+002			YES	FD
84662	Diethylphthalate	1.5E-001		1.5E-001		mg/kg	ACS-SA01-03	1/2	3.960-3.960	1.5E-001		6.3E+004			YES	FD
131113	Dimethylphthalate	1.4E+000		1.4E+000		mg/kg	ACS-SA02-03	1/2	0.660-0.660	1.4E+000		7.8E+005			YES	FD
100414	Ethyl Benzene	7.0E+000	J	1.4E+002		mg/kg	ACS-SA02-03	2/2	NA	1.4E+002		7.8E+003			YES	FD
206440	Fluoranthene	3.4E+000		3.4E+000		mg/kg	ACS-SA01-03	1/2	3.960-3.960	3.4E+000		3.1E+003			YES	FD
86737	Fluorene	4.7E-001		6.1E-001		mg/kg	ACS-SA01-03	2/2	NA	6.1E-001		3.1E+003			YES	FD
76448	Heptachlor	8.8E-002		8.8E-002		mg/kg	ACS-SB46-01	1/14	0.008-0.880	8.8E-002		1.4E-001			YES	FD
1024573	Heptachlor epoxide	4.2E-002		4.2E-002		mg/kg	ACS-SB46-01	1/14	0.008-0.880	4.2E-002		7.0E-002			YES	FD
7439896	Iron	9.2E+003	J	1.3E+004	J	mg/kg	ACS-SA01-03	2/2	NA	1.3E+004		2.3E+004			YES	FD
78591	Isophorone	8.4E+000		4.0E+001		mg/kg	ACS-SA02-03	2/2	NA	4.0E+001		6.7E+002			YES	FD
7439921	Lead	5.8E+003	J	1.1E+004	J	mg/kg	ACS-SA01-03	2/2	NA	1.1E+004					NO	NTX
7439954	Magnesium	2.3E+003	J	3.7E+004	J	mg/kg	ACS-SA01-03	2/2	NA	3.7E+004					NO	NTX
7439965	Manganese	1.4E+002	J	1.5E+003	J	mg/kg	ACS-SA01-03	2/2	NA	1.5E+003		1.6E+003			YES	FD
7439976	Mercury	9.2E+000	J	9.5E+000	J	mg/kg	ACS-SA02-03	2/2	NA	9.5E+000		**			YES	FD
75092	Methylene Chloride	2.0E-001		2.0E-001		mg/kg	ACS-SA01-03	1/2	2.900-2.900	2.0E-001		8.5E+001			YES	FD
86306	N-Nitrosodiphenylamine	4.3E+000		4.3E+000		mg/kg	ACS-SA02-03	1/2	0.660-0.660	4.3E+000		1.3E+002			YES	FD
91203	Naphthalene	9.9E+000		2.8E+001		mg/kg	ACS-SA02-03	2/2	NA	2.8E+001		1.6E+003			YES	FD
7440020	Nickel	2.3E+001		5.3E+001		mg/kg	ACS-SA01-03	2/2	NA	5.3E+001		1.6E+003			YES	FD
87865	Pentachlorophenol	1.5E+000		1.5E+000		mg/kg	ACS-SA01-03	1/2	19.200-19.200	1.5E+000		5.3E+000			YES	FD
85018	Phenanthrene	4.5E-001		3.1E+000		mg/kg	ACS-SA01-03	2/2	NA	3.1E+000					NO	NTX
108952	Phenol	7.0E-001		6.4E+000		mg/kg	ACS-SA02-03	2/2	NA	6.4E+000		4.7E+004			YES	FD
7440097	Potassium	3.8E+002	J	1.4E+003	J	mg/kg	ACS-SA01-03	2/2	NA	1.4E+003					NO	NTX

TABLE 2-5-6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services Site

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil, 0 to 2 feet
Exposure Point:	Soil

File: SS-A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	9.0E-003		9.0E-003		mg/kg	ACS-SA01-03	1/2	0.225-0.225	9.0E-003		1.6E+003			YES	FD
75343	1,1-Dichloroethane	8.6E-002		8.6E-002		mg/kg	ACS-SA01-03	1/2	0.225-0.225	8.6E-002		7.8E+003			YES	FD
95501	1,2-Dichlorobenzene	5.9E-001		5.9E-001		mg/kg	ACS-SA02-03	1/2	0.660-0.660	5.9E-001		7.0E+003			YES	FD
129000	Pyrene	2.3E+000		2.3E+000		mg/kg	ACS-SA01-03	1/2	3.960-3.960	2.3E+000		2.3E+003			YES	FD
7782492	Selenium	8.8E+000		1.7E+001		mg/kg	ACS-SA01-03	2/2	NA	1.7E+001		3.9E+002			YES	FD
	Solids (total)	8.1E+001		8.2E+001		mg/kg	ACS-SA02-03	2/2	NA	8.2E+001					NO	NTX
100425	Styrene	2.3E+001		2.3E+001		mg/kg	ACS-SA02-03	1/2	0.030-0.030	2.3E+001		1.6E+004			YES	FD
127184	Tetrachloroethene	1.3E-001		2.5E+002		mg/kg	ACS-SA02-03	2/2	NA	2.5E+002		1.2E+001			YES	FD, ARV
108883	Toluene	2.9E+001	J	6.4E+002		mg/kg	ACS-SA02-03	2/2	NA	6.4E+002		1.6E+004			YES	FD
79016	Trichloroethene	1.1E-002		1.0E+002		mg/kg	ACS-SA02-03	2/2	NA	1.0E+002		5.8E+001			YES	FD, ARV
7440622	Vanadium	1.2E+001	J	2.6E+001	J	mg/kg	ACS-SA02-03	2/2	NA	2.6E+001		5.5E+002			YES	FD
1330207	Xylenes (total)	4.4E+001	J	5.7E+002		mg/kg	ACS-SA02-03	2/2	NA	5.7E+002		1.6E+005			YES	FD
7440666	Zinc	3.6E+003		1.5E+004		mg/kg	ACS-SA02-03	2/2	NA	1.5E+004		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** Mercury does not have oral toxicity information. It does have inhalationtoxicity information.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxcity Value (ARV)

Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = *Chemical of Potential Concern*
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	*Future*
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CND-4A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	9.0E-003		9.0E-003		mg/kg	ACS-SA01-03	1/8	0.005-370.000	9.0E-003		1.6E+003			YES	FD
75343	1,1-Dichloroethane	6.6E-002		1.5E-001		mg/kg	ACS-SB01-03	2/7	0.225-370.000	1.5E-001		7.8E+003			YES	FD
95501	1,2-Dichlorobenzene	2.0E-001		5.9E-001		mg/kg	ACS-SA02-03	2/7	0.406-36.960	5.9E-001		7.0E+003			YES	FD
540590	1,2-Dichloroethene (total)	2.1E-002		7.6E+000		mg/kg	ACS-SA02-03	2/4	0.650-370.000	7.6E+000		7.0E+002			YES	FD
78875	1,2-Dichloropropane	1.9E-002		1.9E-002		mg/kg	ACS-SA01-03	1/8	0.005-370.000	1.9E-002		9.4E+000			YES	FD
95954	2,4,5-Trichlorophenol	1.7E-001		1.7E-001		mg/kg	ACS-SA01-03	1/7	0.406-179.200	1.7E-001		7.8E+003			YES	FD
105679	2,4-Dimethylphenol	1.3E+000		4.9E+000		mg/kg	ACS-SA02-03	2/7	0.406-36.960	4.9E+000		1.6E+003			YES	FD
78933	2-Butanone	2.4E+002		2.4E+002		mg/kg	SP02-S-IEA	1/8	0.060-730.000	2.4E+002		4.7E+004			YES	FD
91576	2-Methylnaphthalene	4.6E-001		5.6E+001		mg/kg	ACS-TP01-03_5	5/7	0.406-16.236	5.6E+001		1.6E+003			YES	FD
95487	2-Methylphenol	4.7E+000		4.7E+000		mg/kg	ACS-SA02-03	1/7	0.406-36.960	4.7E+000		3.9E+003			YES	FD
72548	4,4'-DDD	2.5E-002		1.5E-001		mg/kg	ACS-SB46-01	3/19	0.016-4.365	1.5E-001		2.7E+000			YES	FD
108101	4-Methyl-2-pentanone	2.7E+002		5.0E+002		mg/kg	SP02-S-IEA	3/8	0.053-3.000	5.0E+002		6.3E+003			YES	FD
106445	4-Methylphenol	2.3E-001		4.6E+000		mg/kg	ACS-SA02-03	2/7	0.406-36.960	4.6E+000		3.9E+002			YES	FD
83329	Acenaphthene	3.6E-001		3.6E-001		mg/kg	ACS-SA01-03	1/7	0.406-179.200	3.6E-001		4.7E+003			YES	FD
67641	Acetone	1.3E-001		9.7E-001		mg/kg	ACS-SB01-03	2/8	0.100-760.000	9.7E-001		7.8E+003			YES	FD
7429905	Aluminum	3.1E+003		1.3E+004		mg/kg	ACS-TP01-03_5	7/7	NA	1.3E+004		7.8E+004			YES	FD
120127	Anthracene	6.6E-001		6.6E-001		mg/kg	ACS-SA01-03	1/7	0.406-36.960	6.6E-001		2.3E+004			YES	FD
7440360	Antimony	9.0E+000		8.5E+001		mg/kg	ACS-TP01-03_5	6/7	7.300-7.300	8.5E+001		3.1E+001			YES	FD, ARV
53469219	Aroclor-1242	1.5E+001		2.8E+002		mg/kg	ACS-TP01-03_5	4/20	0.080-21.824	2.8E+002		3.2E-001			YES	FD, ARV
12672296	Aroclor-1248	1.6E-001		1.3E+002		mg/kg	KP01-S-IEA	7/20	0.080-8.800	1.3E+002		3.2E-001			YES	FD, ARV
11097691	Aroclor-1254	2.0E+000		2.2E+001		mg/kg	ACS-SB48-01	5/20	0.160-43.648	2.2E+001		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	2.9E+001		3.6E+001		mg/kg	SP02-S-IEA	2/20	0.160-19.840	3.6E+001		3.2E-001			YES	FD, ARV
7440382	Arsenic	2.1E+000		3.1E+001		mg/kg	ACS-SA02-03	7/7	NA	3.1E+001		4.3E-001			YES	FD, ARV
7440393	Barium	1.1E+002		5.7E+003		mg/kg	ACS-TP01-03_5	7/7	NA	5.7E+003		5.5E+003			YES	FD, ARV
71432	Benzene	3.2E-001		3.2E+000		mg/kg	ACS-SA02-03	2/8	0.005-370.000	3.2E+000		2.2E+001			YES	FD
56553	Benzo(a)anthracene	8.5E-001		2.4E+000		mg/kg	ACS-SA01-03	2/7	0.406-36.960	2.4E+000		8.7E-001			YES	FD, ARV
50328	Benzo(a)pyrene	1.4E+000		1.4E+000		mg/kg	ACS-SB01-03	1/8	0.406-36.960	1.4E+000		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	4.3E-001		3.9E+000		mg/kg	ACS-SB01-03	2/8	0.406-36.960	3.9E+000		8.7E-001			YES	FD, ARV
191242	Benzo(g,h,i)perylene	1.1E+000		1.1E+000		mg/kg	ACS-SB01-03	1/8	0.406-36.960	1.1E+000					NO	NTX
207089	Benzo(k)fluoranthene	4.3E-001		3.9E+000		mg/kg	ACS-SB01-03	2/8	0.406-36.960	3.9E+000		8.7E+000			YES	FD
7440417	Beryllium	1.6E-001		1.5E+000		mg/kg	ACS-SA01-03	4/7	0.578-0.609	1.5E+000		1.6E+002			YES	FD
117817	bis(2-Ethylhexyl)phthalate	6.0E+001		5.4E+002		mg/kg	ACS-TP01-03_5	7/8	0.406-0.406	5.4E+002		4.6E+001			YES	FD, ARV
85687	Butylbenzylphthalate	3.2E+000		5.1E+001		mg/kg	ACS-TP01-03_5	4/7	0.406-16.236	5.1E+001		1.6E+004			YES	FD
7440439	Cadmium	5.0E+000		1.7E+002		mg/kg	ACS-TP01-03_5	7/7	NA	1.7E+002		7.8E+001			YES	FD, ARV
7440702	Calcium	2.9E+003		1.6E+005		mg/kg	ACS-SA01-03	7/7	NA	1.6E+005					NO	NTX
108907	Chlorobenzene	6.2E+000		6.2E+000		mg/kg	ACS-SA02-03	1/8	0.005-370.000	6.2E+000		1.6E+003			YES	FD
67663	Chloroform	1.0E-002		1.0E-002		mg/kg	ACS-SA01-03	1/8	0.005-370.000	1.0E-002		1.0E+002			YES	FD

TABLE 2-5-7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CH0-4A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
16065831	Chromium (total)	7.0E+001		3.1E+003		mg/kg	ACS-TP01-03_5	7/7	NA	3.1E+003		1.2E+005			YES	FD
218019	Chrysene	1.3E+000		1.3E+000		mg/kg	ACS-SA01-03	2/8	0.406-36.960	1.3E+000		8.7E+001			YES	FD
7440484	Cobalt	8.4E+000		1.5E+002		mg/kg	ACS-TP01-03_5	6/7	10.600-10.600	1.5E+002		4.7E+003			YES	FD
7440508	Copper	7.5E+001		4.5E+003		mg/kg	ACS-TP01-03_5	7/7	NA	4.5E+003		3.1E+003			YES	FD, ARV
57125	Cyanide (total)	4.6E+000		6.6E+001		mg/kg	ACS-TP01-03_5	4/4	NA	6.6E+001		1.6E+003			YES	FD
84742	Di-n-butylphthalate	1.1E+001		9.4E+001		mg/kg	ACS-TP01-03_5	5/8	0.406-16.236	9.4E+001		7.8E+003			YES	FD
117840	Di-n-octylphthalate	1.3E+000		3.8E+001		mg/kg	ACS-SB01-03	3/7	0.406-31.680	3.8E+001		1.6E+003			YES	FD
53703	Dibenzo(a,h)anthracene	2.7E-001		2.7E-001		mg/kg	ACS-SB01-03	1/8	0.406-36.960	2.7E-001		8.7E-002			YES	FD, ARV
132649	Dibenzofuran	3.6E-001		4.3E-001		mg/kg	ACS-SA01-03	2/7	0.406-36.960	4.3E-001		3.1E+002			YES	FD
84662	Diethylphthalate	1.5E-001		5.0E+000		mg/kg	ACS-TP01-03_5	2/7	0.406-31.680	5.0E+000		6.3E+004			YES	FD
131113	Dimethylphthalate	0.0E+000		1.4E+000		mg/kg	ACS-SA02-03	2/7	0.406-36.960	1.4E+000		7.8E+005			YES	FD
100414	Ethyl Benzene	7.0E+000		4.3E+003		mg/kg	ACS-TP01-03_5	5/8	0.005-1.500	4.3E+003		7.8E+003			YES	FD
206440	Fluoranthene	7.6E-001		3.4E+000		mg/kg	ACS-SA01-03	2/7	0.406-36.960	3.4E+000		3.1E+003			YES	FD
86737	Fluorene	4.7E-001		6.2E-001		mg/kg	ACS-SB01-03	3/7	0.406-36.960	6.2E-001		3.1E+003			YES	FD
76448	Heptachlor	8.8E-002		8.8E-002		mg/kg	ACS-SB46-01	1/19	0.008-2.182	8.8E-002		1.4E-001			YES	FD
1024573	Heptachlor epoxide	4.2E-002		4.2E-002		mg/kg	ACS-SB46-01	1/19	0.008-2.182	4.2E-002		7.0E-002			YES	FD
193395	Indeno(1,2,3-cd)pyrene	8.2E-001		8.2E-001		mg/kg	ACS-SB01-03	1/8	0.406-36.960	8.2E-001		8.7E-001			YES	FD
7439896	Iron	5.4E+003		7.0E+004		mg/kg	ACS-TP01-03_5	7/7	NA	7.0E+004		2.3E+004			YES	FD, ARV
78591	Isophorone	8.4E-001		1.9E+002		mg/kg	SP01-S-IEA	5/8	0.406-16.236	1.9E+002		6.7E+002			YES	FD
7439921	Lead	4.0E+002		1.6E+004		mg/kg	ACS-TP01-03_5	7/7	NA	1.6E+004		4.0E+002			YES	FD, ARV
7439954	Magnesium	2.3E+003		3.7E+004		mg/kg	ACS-SA01-03	6/7	330.000-1330.000	3.7E+004					NO	NTX
7439965	Manganese	1.4E+002		1.5E+003		mg/kg	ACS-SA01-03	7/7	NA	1.5E+003		1.6E+003			YES	FD
7439976	Mercury	2.4E-001		9.5E+000		mg/kg	ACS-SA02-03	7/7	NA	9.5E+000		**			YES	NTX
75092	Methylene Chloride	2.3E-002		2.0E-001		mg/kg	ACS-SA01-03	2/8	0.520-370.000	2.0E-001		8.5E+001			YES	FD
86306	N-Nitrosodiphenylamine	1.9E+000		4.3E+000		mg/kg	ACS-SA02-03	2/8	0.406-36.960	4.3E+000		1.3E+002			YES	FD
91203	Naphthalene	6.8E-001		9.7E+001		mg/kg	ACS-TP01-03_5	5/8	0.406-16.236	9.7E+001		1.6E+003			YES	FD
7440020	Nickel	1.0E+001		2.0E+002		mg/kg	ACS-TP01-03_5	7/7	NA	2.0E+002		1.6E+003			YES	FD
95476	ortho-xylene	2.3E-002		2.3E-002		mg/kg	SB86-03-FT	1/1	NA	2.3E-002		1.6E+005			YES	FD
87865	Pentachlorophenol	1.5E+000		1.5E+000		mg/kg	ACS-SA01-03	1/8	1.968-179.200	1.5E+000		5.3E+000			YES	FD
85018	Phenanthrene	4.5E-001		4.3E+000		mg/kg	ACS-TP01-03_5	4/7	0.406-31.680	4.3E+000					NO	NTX
108952	Phenol	1.9E-001		2.8E+001		mg/kg	ACS-TP01-03_5	4/7	0.406-31.680	2.8E+001		4.7E+004			YES	FD
7440097	Potassium	3.3E+002		1.4E+003		mg/kg	ACS-SA01-03	5/7	578.000-601.000	1.4E+003					NO	NTX
129000	Pyrene	1.3E+000		2.3E+000		mg/kg	ACS-SA01-03	2/7	0.406-36.960	2.3E+000		2.3E+003			YES	FD
7782492	Selenium	1.4E+000		1.7E+001		mg/kg	ACS-SA01-03	7/7	NA	1.7E+001		3.9E+002			YES	FD
7440224	Silver	2.5E+000		2.5E+001		mg/kg	ACS-TP01-03_5	3/7	1.220-14.100	2.5E+001		3.9E+002			YES	FD
7440235	Sodium	2.2E+002		3.9E+003		mg/kg	ACS-TP01-03_5	4/7	578.000-609.000	3.9E+003					NO	NTX
	Solids (total)	9.4E-002		9.3E+001		mg/kg	ACS-SB01-03	5/5	NA	9.3E+001					NO	NTX

TABLE 2-5-7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A3C.wk4

CAS Number	Chemical*	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
100425	Styrene	2.3E+001		2.3E+001		mg/kg	ACS-SA02-03	1/8	0.005-370.000	2.3E+001		1.6E+004			YES	FD
127184	Tetrachloroethene	1.3E-001		7.9E+002		mg/kg	ACS-TP01-03_5	6/8	0.005-1.500	7.9E+002		1.2E+001			YES	FD, ARV
108883	Toluene	2.7E+000		1.9E+004		mg/kg	ACS-TP01-03_5	6/7	0.650-0.650	1.9E+004		1.6E+004			YES	FD, ARV
79016	Trichloroethene	1.1E-002		1.7E+002		mg/kg	ACS-TP01-03_5	3/8	0.005-78.000	1.7E+002		5.8E+001			YES	FD, ARV
7440622	Vanadium	6.0E+000		4.8E+001		mg/kg	ACS-TP01-03_5	6/7	6.010-6.010	4.8E+001		5.5E+002			YES	FD
1330207	Xylenes (total)	5.9E+000		2.3E+004		mg/kg	ACS-TP01-03_5	7/7	NA	2.3E+004		1.6E+005			YES	FD
7440666	Zinc	2.9E+002		1.6E+004		mg/kg	ACS-TP01-03_5	7/7	NA	1.6E+004		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

* Mercury does not have oral toxicity information. It does have inhalation toxicity information.

(1) Minimum/maximum detected concentration.

(2) No background samples collected

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

CAS Number	Chemical*	Minimum Concentration [1]	Minimum Qualifier	Maximum Concentration [1]	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value [2]	Reference Toxicity Value [3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
71556	1,1,1-Trichloroethane	9.00E-003		7.60E+003		mg/kg	ACS-SB30-10	5/31	0.005-370.000	7.60E+003		1.56E+003			YES	FD, ARV
79005	1,1,2-Trichloroethane	6.30E-001		6.30E-001		mg/kg	ACS-SB29-08	1/31	0.005-4875.000	6.30E-001		1.12E+001			NO	IFD
75343	1,1-Dichloroethane	5.00E-003		1.70E+000		mg/kg	ACS-SB29-08	6/26	0.005-4875.000	1.70E+000		7.82E+003			YES	FD
95501	1,2-Dichlorobenzene	2.00E-001		5.90E-001		mg/kg	ACS-SA02-03	3/14	0.330-62.040	5.90E-001		7.04E+003			YES	FD
107062	1,2-Dichloroethane	4.40E-002		8.10E-001		mg/kg	ACS-SB29-08	2/31	0.005-4875.000	8.10E-001		7.02E+000			YES	FD
540590	1,2-Dichloroethene (total)	2.10E-002		2.60E+001		mg/kg	ACS-SB44-04_5	6/23	0.005-4875.000	2.60E+001		7.04E+002			YES	FD
78875	1,2-Dichloropropane	1.90E-002		5.50E-001		mg/kg	ACS-SB29-08	3/31	0.005-4875.000	5.50E-001		9.39E+000			YES	FD
106467	1,4-Dichlorobenzene	9.30E-002		9.30E-002		mg/kg	ACS-SB41-05_5	1/19	0.330-62.040	9.30E-002		2.66E+001			YES	FD
95954	2,4,5-Trichlorophenol	1.70E-001		1.70E-001		mg/kg	ACS-SA01-03	1/14	0.406-300.800	1.70E-001		7.82E+003			YES	FD
105679	2,4-Dimethylphenol	3.90E-002		6.20E+001		mg/kg	ACS-SB30-10	6/14	0.330-36.960	6.20E+001		1.56E+003			YES	FD
121142	2,4-Dinitrotoluene	8.40E-001		8.40E-001		mg/kg	ACS-SB02-07	1/19	0.330-62.040	8.40E-001		1.56E+002			YES	FD
78933	2-Butanone	5.00E-003		9.90E+004		mg/kg	ACS-SB30-10	7/30	0.010-730.000	9.90E+004		4.69E+004			YES	FD, ARV
591786	2-Hexanone	4.00E-003		3.90E-001		mg/kg	ACS-SB47-04_5	2/26	0.010-9750.000	3.90E-001		3.13E+003			YES	FD
91576	2-Methylnaphthalene	2.90E-001		2.10E+002		mg/kg	ACS-SB30-10	10/14	0.330-16.236	2.10E+002		1.56E+003			YES	FD
95487	2-Methylphenol	8.00E-002		2.10E+001		mg/kg	ACS-SB30-10	5/14	0.330-36.960	2.10E+001		3.91E+003			YES	FD
72548	4,4'-DDD	2.50E-002		1.50E-001		mg/kg	ACS-SB46-01	3/38	0.016-4.365	1.50E-001		2.66E+000			YES	FD
108101	4-Methyl-2-pentanone	2.00E-003		6.10E+004		mg/kg	ACS-SB30-10	9/31	0.010-97.000	6.10E+004		6.26E+003			YES	FD, ARV
106445	4-Methylphenol	4.10E-002		2.20E+001		mg/kg	ACS-SB30-10	8/14	0.330-36.960	2.20E+001		3.91E+002			YES	FD
100027	4-Nitrophenol	6.60E-002		6.60E-002		mg/kg	ACS-TP01-06	1/14	0.330-153.600	6.60E-002		6.26E+002			YES	FD
83329	Acenaphthene	3.60E-001		7.10E-001		mg/kg	ACS-SB02-07	3/14	0.406-300.800	7.10E-001		4.69E+003			YES	FD
67641	Acetone	7.90E-002		3.40E+004		mg/kg	ACS-SB30-10	7/31	0.009-760.000	3.40E+004		7.82E+003			YES	FD, ARV
7429905	Aluminum	2.38E+003		1.80E+004		mg/kg	ACS-SB29-08	14/14	NA	1.80E+004		7.82E+004			YES	FD
120127	Anthracene	6.60E-001		1.20E+000		mg/kg	ACS-SB41-05_5	3/14	0.330-62.040	1.20E+000		2.35E+004			YES	FD
7440360	Antimony	9.00E+000		1.52E+002		mg/kg	ACS-SB30-10	8/10	1.200-7.300	1.52E+002		3.13E+001			YES	FD, ARV
53469219	Aroclor-1242	3.20E+000		2.80E+002		mg/kg	ACS-TP01-03_5	8/43	0.010-21.824	2.80E+002		3.19E-001			YES	FD, ARV
12672296	Aroclor-1248	1.60E-001		1.27E+002		mg/kg	KP01-S-IEA	9/43	0.010-8.800	1.27E+002		3.19E-001			YES	FD, ARV
11097691	Aroclor-1254	1.00E+000		4.40E+001		mg/kg	ACS-SB30-10	14/43	0.020-43.648	4.40E+001		3.19E-001			YES	FD, ARV
11096825	Aroclor-1260	9.80E-001		3.60E+001		mg/kg	SP02-S-IEA	4/43	0.020-19.840	3.60E+001		3.19E-001			YES	FD, ARV
7440382	Arsenic	1.50E+000		3.06E+001		mg/kg	ACS-SA02-03	14/14	NA	3.06E+001		4.26E-001			YES	FD, ARV
7440393	Barium	6.74E+001		6.40E+003		mg/kg	ACS-SB30-10	10/14	42.800-46.500	6.40E+003		5.48E+003			YES	FD, ARV
71432	Benzene	2.00E-003		1.50E+003		mg/kg	ACS-SB30-10	10/31	0.005-370.000	1.50E+003		2.20E+001			YES	FD, ARV
56553	Benzo(a)anthracene	8.50E-001		2.40E+000		mg/kg	ACS-SA01-03	4/14	0.330-62.040	2.40E+000		8.75E-001			YES	FD, ARV
50328	Benzo(a)pyrene	6.10E-001		1.40E+000		mg/kg	ACS-SB01-03	3/19	0.330-62.040	1.40E+000		8.75E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	4.30E-001		3.90E+000		mg/kg	ACS-SB01-03	4/19	0.330-62.040	3.90E+000		8.75E-001			YES	FD, ARV
191242	Benzo(g,h,i)perylene	2.60E-001		1.10E+000		mg/kg	ACS-SB01-03	3/19	0.330-62.040	1.10E+000					NO	NTX
207089	Benzo(k)fluoranthene	4.30E-001		3.90E+000		mg/kg	ACS-SB01-03	4/19	0.330-62.040	3.90E+000		8.75E+000			YES	FD
65850	Benzoic Acid	7.90E-002		2.30E+002		mg/kg	ACS-SB30-10	5/14	1.600-179.200	2.30E+002		3.13E+005			YES	FD

TABLE 2-5-8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440417	Beryllium	6.00E-002		1.50E+000		mg/kg	ACS-SA01-03	11/14	0.578-0.609	1.50E+000		1.60E+002			YES	FD
117817	bis(2-Ethylhexyl)phthalate	1.10E-001		8.90E+003		mg/kg	ACS-SB30-10	17/19	0.330-0.406	8.90E+003		4.56E+001			YES	FD, ARV
85687	Butylbenzylphthalate	3.20E+000		6.60E+001		mg/kg	ACS-SB30-10	8/14	0.330-16.236	6.60E+001		1.56E+004			YES	FD
7440439	Cadmium	9.00E-002		1.70E+003		mg/kg	ACS-SB30-10	14/14	NA	1.70E+003		7.82E+001			YES	FD, ARV
7440702	Calcium	4.04E+002		1.57E+005		mg/kg	ACS-SA01-03	12/14	365.000-408.000	1.57E+005					NO	NTX
75150	Carbon Disulfide	3.00E-003		3.00E-003		mg/kg	ACS-SB47-04_5	1/26	0.005-4875.000	3.00E-003		7.82E+003			NO	IFD
108907	Chlorobenzene	1.80E-002		1.00E+003		mg/kg	ACS-SB30-10	6/31	0.005-370.000	1.00E+003		1.56E+003			YES	FD
75003	Chloroethane	1.20E-002		1.20E-002		mg/kg	ACS-SB47-04_5	1/31	0.010-9750.000	1.20E-002		2.20E+002			NO	IFD
67663	Chloroform	1.00E-003		1.00E-002		mg/kg	ACS-SA01-03	4/31	0.005-4875.000	1.00E-002		1.05E+002			YES	FD
16065831	Chromium (total)	4.80E+000		3.75E+003		mg/kg	ACS-SB30-10	14/14	NA	3.75E+003		1.17E+005			YES	FD
218019	Chrysene	1.30E+000		1.60E+000		mg/kg	ACS-SB41-05_5	4/19	0.330-62.040	1.60E+000		8.75E+001			YES	FD
156592	cis-1,2-Dichloroethene	2.20E-002		2.20E-002		mg/kg	SB67-07-FT	1/8	0.005-76.000	2.20E-002		7.82E+002			YES	FD
7440484	Cobalt	8.42E+000		1.48E+002		mg/kg	ACS-TP01-03_5	9/14	10.700-11.600	1.48E+002		4.69E+003			YES	FD
7440508	Copper	7.70E+000		5.79E+003		mg/kg	ACS-SB30-10	11/14	4.300-4.300	5.79E+003		3.13E+003			YES	FD, ARV
57125	Cyanide (total)	4.60E+000		6.62E+001		mg/kg	ACS-TP01-03_5	6/11	2.700-2.900	6.62E+001		1.56E+003			YES	FD
84742	Di-n-butylphthalate	3.90E-002		2.40E+002		mg/kg	ACS-SB30-10	15/19	0.330-16.236	2.40E+002		7.82E+003			YES	FD
117840	Di-n-octylphthalate	4.50E-001		3.80E+001		mg/kg	ACS-SB01-03	7/14	0.330-31.680	3.80E+001		1.56E+003			YES	FD
53703	Dibenzo(a,h)anthracene	1.90E-001		2.70E-001		mg/kg	ACS-SB01-03	2/19	0.330-62.040	2.70E-001		8.75E-002			YES	FD, ARV
132649	Dibenzofuran	7.10E-002		6.40E-001		mg/kg	ACS-SB02-07	5/14	0.330-62.040	6.40E-001		3.13E+002			YES	FD
84662	Diethylphthalate	1.50E-001		5.00E+000		mg/kg	ACS-TP01-03_5	4/14	0.330-62.040	5.00E+000		6.26E+004			YES	FD
131113	Dimethylphthalate	1.40E+000		1.60E+001		mg/kg	ACS-SB30-10	3/14	0.330-36.960	1.60E+001		7.82E+005			YES	FD
100414	Ethyl Benzene	2.00E-003		2.30E+004		mg/kg	ACS-SB30-10	24/31	0.005-1.500	2.30E+004		7.82E+003			YES	FD, ARV
206440	Fluoranthene	4.00E-002		6.10E+000		mg/kg	ACS-SB41-05_5	5/14	0.330-62.040	6.10E+000		3.13E+003			YES	FD
86737	Fluorene	9.20E-002		9.80E-001		mg/kg	ACS-SB41-05_5	6/14	0.330-62.040	9.80E-001		3.13E+003			YES	FD
76448	Heptachlor	8.80E-002		8.80E-002		mg/kg	ACS-SB46-01	1/38	0.008-2.182	8.80E-002		1.42E-001			NO	IFD
1024573	Heptachlor epoxide	4.20E-002		4.20E-002		mg/kg	ACS-SB46-01	1/38	0.008-2.182	4.20E-002		7.02E-002			NO	IFD
193395	Indeno(1,2,3-cd)pyrene	5.50E-001		8.20E-001		mg/kg	ACS-SB01-03	2/19	0.330-62.040	8.20E-001		8.75E-001			YES	FD
7439896	Iron	1.99E+003		7.01E+004		mg/kg	ACS-TP01-03_5	14/14	NA	7.01E+004		2.35E+004			YES	FD, ARV
78591	Isophorone	1.40E-001		3.60E+003		mg/kg	ACS-SB30-10	11/19	0.330-16.236	3.60E+003		6.72E+002			YES	FD, ARV
7439921	Lead	5.00E+000		1.72E+004		mg/kg	ACS-SB30-10	14/14	NA	1.72E+004		4.00E+002			YES	FD, ARV
1330207	m,p-xylene	1.20E+002		1.20E+002		mg/kg	SB84-05-FT	2/5	0.010-0.012	1.20E+002		1.56E+005			YES	FD
7439954	Magnesium	5.82E+002		3.69E+004		mg/kg	ACS-SA01-03	11/14	406.000-1330.000	3.69E+004					NO	NTX
7439965	Manganese	2.55E+001		1.54E+003		mg/kg	ACS-SA01-03	14/14	NA	1.54E+003		1.56E+003			YES	FD
7439976	Mercury	7.00E-002		3.60E+001		mg/kg	ACS-SB30-10	11/14	0.040-0.120	3.60E+001		**			YES	FD
75092	Methylene Chloride	2.30E-002		2.70E+000		mg/kg	SB84-05-FT	5/31	0.009-5900.000	2.70E+000		8.52E+001			YES	FD
86306	N-Nitrosodiphenylamine	1.80E-001		4.30E+000		mg/kg	ACS-SA02-03	3/19	0.330-62.040	4.30E+000		1.30E+002			YES	FD
91203	Naphthalene	5.40E-002		6.80E+002		mg/kg	ACS-SB30-10	14/19	0.330-16.236	6.80E+002		1.56E+003			YES	FD

TABLE 2-5-8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440020	Nickel	1.03E+001		1.97E+002		mg/kg	ACS-TP01-03_5	10/14	8.600-12.000	1.97E+002		1.56E+003			YES	FD
95476	ortho-xylene	1.00E-002		6.70E+001		mg/kg	SB84-05-FT	4/5	0.005-0.005	6.70E+001		1.56E+005			YES	FD
87865	Pentachlorophenol	4.50E-002		1.60E+001		mg/kg	ACS-SB02-07	4/19	1.600-300.800	1.60E+001		5.32E+000			YES	FD, ARV
85018	Phenanthrene	2.20E-001		6.40E+000		mg/kg	ACS-SB41-05_5	7/14	0.330-62.040	6.40E+000					NO	NTX
108952	Phenol	5.60E-002		8.60E+002		mg/kg	ACS-SB30-10	10/14	0.330-31.680	8.60E+002		4.69E+004			YES	FD
7440097	Potassium	2.09E+002		3.59E+003		mg/kg	ACS-SB29-08	12/14	578.000-601.000	3.59E+003					NO	NTX
129000	Pyrene	7.10E-002		4.20E+000		mg/kg	ACS-SB02-07	5/14	0.330-62.040	4.20E+000		2.35E+003			YES	FD
7782492	Selenium	1.40E+000		1.57E+002		mg/kg	ACS-SB30-10	9/14	0.430-0.500	1.57E+002		3.91E+002			YES	FD
7440224	Silver	2.45E+000		3.12E+002		mg/kg	ACS-SB30-10	5/14	1.220-14.100	3.12E+002		3.91E+002			YES	FD
7440235	Sodium	2.14E+002		3.92E+003		mg/kg	ACS-TP01-03_5	6/14	214.000-609.000	3.92E+003					NO	NTX
0	Solids (total)	8.17E-002		9.34E+001		mg/kg	ACS-SB01-09	16/16	NA	9.34E+001					NO	NTX
100425	Styrene	5.80E-002		3.10E+002		mg/kg	ACS-SB29-08	5/31	0.005-4875.000	3.10E+002		1.56E+004			YES	FD
127184	Tetrachloroethene	2.00E-003		4.60E+004		mg/kg	ACS-SB30-10	16/31	0.005-1.500	4.60E+004		1.23E+001			YES	FD, ARV
7440280	Thallium	1.50E+000		1.50E+000		mg/kg	ACS-SB29-08	1/14	0.700-1.700	1.50E+000		5.48E+000			YES	FD
108883	Toluene	1.00E-003		1.30E+005		mg/kg	ACS-SB30-10	22/26	0.005-0.700	1.30E+005		1.56E+004			YES	FD, ARV
79016	Trichloroethene	1.10E-002		1.90E+004		mg/kg	ACS-SB30-10	10/31	0.005-76.000	1.90E+004		5.81E+001			YES	FD, ARV
7440622	Vanadium	3.90E+000		4.77E+001		mg/kg	ACS-TP01-03_5	13/14	6.010-6.010	4.77E+001		5.48E+002			YES	FD
75014	Vinyl Chloride	1.20E-002		1.20E-002		mg/kg	SB87-07-FT	1/31	0.005-9750.000	1.20E-002		3.36E-001			NO	IFD
1330207	Xylenes (total)	1.00E-002		1.00E+005		mg/kg	ACS-SB30-10	24/26	0.005-0.770	1.00E+005		1.56E+005			YES	FD
7440666	Zinc	9.40E+000		1.58E+004		mg/kg	ACS-TP01-03_5	14/14	NA	1.58E+004		2.35E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** Mercury does not have oral toxicity information. It does have inhalation toxicity information.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxcity Value (ARV)
Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-5-9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Soil, Area 5
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: 88-ASC.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
930687	2-Cyclohexen-1-one	2.9E-001	JN	3.5E-001	JN	mg/kg	ACS-SS01-AVG	2/2	NA	3.5E-001					NO	NTX
72559	4,4'-DDE	6.9E-003	J	1.1E-002		mg/kg	ACS-SS02-001	2/2	NA	1.1E-002		1.9E+000			YES	FD
50293	4,4'-DDT	9.2E-003	J	1.4E-002	J	mg/kg	ACS-SS02-001	2/2	NA	1.4E-002		1.9E+000			YES	FD
319846	alpha-BHC	1.1E-003	J	1.1E-003	J	mg/kg	ACS-SS01-AVG	1/2	0.002-0.002	1.1E-003		1.0E-001			YES	FD
57749	alpha-Chlordane	5.0E-004	J	1.0E-002		mg/kg	ACS-SS01-AVG	2/2	NA	1.0E-002		1.8E+000			YES	FD
7429905	Aluminum	4.1E+003		6.1E+003		mg/kg	ACS-SS02-001	2/2	NA	6.1E+003		7.8E+004			YES	FD
7440360	Antimony	1.5E+001	J	1.5E+001	J	mg/kg	ACS-SS02-001	1/2	NA	1.5E+001		3.1E+001			YES	FD
12672296	Aroclor-1248	1.4E-001	J	1.4E-001	J	mg/kg	ACS-SS02-001	1/2	NA	1.4E-001		3.2E-001			YES	FD
11097691	Aroclor-1254	2.6E-001		3.2E-001		mg/kg	ACS-SS02-001	2/2	NA	3.2E-001		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	1.8E-001		2.3E-001		mg/kg	ACS-SS02-001	2/2	NA	2.3E-001		3.2E-001			YES	FD
7440382	Arsenic	2.9E+000		3.4E+000		mg/kg	ACS-SS02-001	2/2	NA	3.4E+000		4.3E-001			YES	FD, ARV
7440393	Barium	5.3E+001		1.2E+002		mg/kg	ACS-SS02-001	2/2	NA	1.2E+002		5.5E+003			YES	FD
56553	Benzo(a)anthracene	5.5E-002	J	6.9E-002	J	mg/kg	ACS-SS02-001	2/2	NA	6.9E-002		8.7E-001			YES	FD
50328	Benzo(a)pyrene	5.7E-002	J	1.1E-001	J	mg/kg	ACS-SS02-001	2/2	NA	1.1E-001		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	5.3E-002	J	1.1E-001	J	mg/kg	ACS-SS02-001	2/2	NA	1.1E-001		8.7E-001			YES	FD
191242	Benzo(g,h,i)perylene	1.1E-001	J	2.2E-001		mg/kg	ACS-SS01-AVG	2/2	NA	2.2E-001					NO	NTX
207089	Benzo(k)fluoranthene	5.5E-002	J	8.7E-002	J	mg/kg	ACS-SS02-001	2/2	NA	8.7E-002		8.7E+000			YES	FD
7440417	Beryllium	2.7E-001	J	4.8E-001	J	mg/kg	ACS-SS02-001	2/2	NA	4.8E-001		1.6E+002			YES	FD
117817	bis(2-Ethylhexyl)phthalate	6.3E-001		6.3E-001		mg/kg	ACS-SS01-AVG	1/2	0.440-0.440	6.3E-001		4.6E+001			YES	FD
85687	Butylbenzylphthalate	5.3E-002	J	5.6E-002	J	mg/kg	ACS-SS01-AVG	2/2	NA	5.6E-002		1.6E+004			YES	FD
7440439	Cadmium	1.4E+000	J	1.5E+000	J	mg/kg	ACS-SS02-001	2/2	NA	1.5E+000		7.8E+001			YES	FD
7440702	Calcium	2.3E+003		7.7E+003		mg/kg	ACS-SS02-001	2/2	NA	7.7E+003					NO	NTX
16065831	Chromium (total)	1.8E+001		2.8E+001		mg/kg	ACS-SS01-AVG	2/2	NA	2.8E+001		1.2E+005			YES	FD
218019	Chrysene	6.6E-002	J	1.1E-001	J	mg/kg	ACS-SS02-001	2/2	NA	1.1E-001		8.7E+001			YES	FD
7440484	Cobalt	4.1E+000		5.6E+000		mg/kg	ACS-SS02-001	2/2	NA	5.6E+000		4.7E+003			YES	FD
7440508	Copper	1.7E+001		2.0E+001		mg/kg	ACS-SS02-001	2/2	NA	2.0E+001		3.1E+003			YES	FD
57125	Cyanide (total)	1.5E-002		1.3E-001		mg/kg	ACS-SS02-001	2/2	NA	1.3E-001		1.6E+003			YES	FD
84742	Di-n-butylphthalate	6.8E-002	J	1.2E-001	J	mg/kg	ACS-SS01-AVG	2/2	NA	1.2E-001		7.8E+003			YES	FD
60571	Dieldrin	3.9E-003	J	5.0E-003	J	mg/kg	ACS-SS01-AVG	2/2	NA	5.0E-003		4.0E-002			YES	FD
115297	Endosulfan I	2.0E-003	J	3.5E-003		mg/kg	ACS-SS02-001	2/2	NA	3.5E-003		4.7E+002			YES	FD
1031078	Endosulfan sulfate	2.3E-003	J	2.3E-003	J	mg/kg	ACS-SS01-AVG	1/2	0.004-0.004	2.3E-003					NO	NTX
72208	Endrin	4.8E-003	J	5.5E-003	J	mg/kg	ACS-SS02-001	2/2	NA	5.5E-003		2.3E+001			YES	FD
7421934	Endrin aldehyde	5.6E-003	J	6.7E-003	J	mg/kg	ACS-SS02-001	2/2	NA	6.7E-003					NO	NTX
53494705	Endrin ketone	5.7E-003	J	7.0E-003		mg/kg	ACS-SS02-001	2/2	NA	7.0E-003					NO	NTX
206440	Fluoranthene	1.1E-001	J	1.5E-001	J	mg/kg	ACS-SS02-001	2/2	NA	1.5E-001		3.1E+003			YES	FD
58899	gamma-BHC	5.0E-004	J	5.0E-004	J	mg/kg	ACS-SS01-AVG	1/2	0.002-0.002	5.0E-004		4.9E-001			YES	FD

TABLE 2-5-9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Soil, Area 5
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-ASC.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
57749	gamma-Chlordane	5.2E-003	J	6.5E-003		mg/kg	ACS-SS01-AVG	2/2	NA	6.5E-003		1.6E+000			YES	FD
76448	Heptachlor	1.0E-003	J	1.3E-003		mg/kg	ACS-SS01-AVG	2/2	NA	1.3E-003		1.4E-001			YES	FD
1024573	Heptachlor epoxide	3.9E-003	J	4.6E-003	J	mg/kg	ACS-SS02-001	2/2	NA	4.6E-003		7.0E-002			YES	FD
193395	Indeno(1,2,3-cd)pyrene	4.9E-002	J	8.7E-002	J	mg/kg	ACS-SS02-001	2/2	NA	8.7E-002		8.7E-001			YES	FD
7439896	Iron	6.4E+003		1.0E+004		mg/kg	ACS-SS02-001	2/2	NA	1.0E+004		2.3E+004			YES	FD
7439921	Lead	4.7E+001		8.3E+001		mg/kg	ACS-SS02-001	2/2	NA	8.3E+001		4.0E+002			YES	FD
7439954	Magnesium	1.2E+003		2.6E+003		mg/kg	ACS-SS02-001	2/2	NA	2.6E+003					NO	NTX
7439965	Manganese	3.5E+002		4.4E+002		mg/kg	ACS-SS02-001	2/2	NA	4.4E+002		1.6E+003			YES	FD
7439976	Mercury	7.0E-002		7.0E-002		mg/kg	ACS-SS02-001	1/2	NA	7.0E-002		**			YES	FD
72435	Methoxychlor	1.4E-002	J	1.7E-002	J	mg/kg	ACS-SS02-001	2/2	NA	1.7E-002		3.9E+002			YES	FD
75092	Methylene Chloride	6.0E-003	J	7.0E-003	J	mg/kg	ACS-SS02-001	2/2	NA	7.0E-003		8.5E+001			YES	FD
7440020	Nickel	7.3E+000	J	1.7E+001	J	mg/kg	ACS-SS01-AVG	2/2	NA	1.7E+001		1.6E+003			YES	FD
85018	Phenanthrene	4.7E-002	J	6.2E-002	J	mg/kg	ACS-SS02-001	2/2	NA	6.2E-002					NO	NTX
7440097	Potassium	6.1E+002	J	8.6E+002		mg/kg	ACS-SS02-001	2/2	NA	8.6E+002					NO	NTX
129000	Pyrene	1.1E-001	J	1.6E-001	J	mg/kg	ACS-SS02-001	2/2	NA	1.6E-001		2.3E+003			YES	FD
7782492	Selenium	4.3E-001	J	5.7E-001	J	mg/kg	ACS-SS02-001	2/2	NA	5.7E-001		3.9E+002			YES	FD
7440224	Silver	1.1E+000		1.1E+000		mg/kg	ACS-SS01-AVG	1/2	1.100-1.100	1.1E+000		3.9E+002			YES	FD
7440235	Sodium	2.1E+001		1.9E+002		mg/kg	ACS-SS02-001	2/2	NA	1.9E+002					NO	NTX
108883	Toluene	2.0E-003	J	2.0E-003	J	mg/kg	ACS-SS02-001	1/2	NA	2.0E-003		1.6E+004			YES	FD
7440622	Vanadium	9.1E+000		1.2E+001		mg/kg	ACS-SS02-001	2/2	NA	1.2E+001		5.5E+002			YES	FD
7440666	Zinc	6.9E+001		1.2E+002		mg/kg	ACS-SS02-001	2/2	NA	1.2E+002		2.3E+004			YES	FD

* Chemicals which were not detected at all are not included here.

** Mercury does not have oral toxicity information. It does have inhalation toxicity information.

(1) *Minimum/maximum detected concentration.*

(2) No background samples collected.

(3) Residential Screening Level - EPA Region III Risk-Based Concentration Table, October 1998. Lead - OSWER Directive 9355.4-12

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Values (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
N- Spike sample not within control limits

TABLE 2-6-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 1
Exposure Medium:	Sediment
Exposure Point:	Fire Pond, puddle

File: SDA1EX.1

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7429905	Aluminum	1.9E+003		4.9E+003		mg/kg	ACS-SD-02-01	2/2	NA	4.9E+003		7.8E+004			YES	FD
12672296	Aroclor-1248	4.6E+000		4.6E+000		mg/kg	ACS-SD-02-01	1/2	8.0E-002	4.6E+000		3.2E-001			YES	FD, ARV
11097691	Aroclor-1254	5.9E-001		1.7E+001		mg/kg	ACS-SD-02-01	2/2	NA	1.7E+001		3.2E-001			YES	FD, ARV
7440382	Arsenic	1.4E+000		1.5E+000		mg/kg	ACS-SD-01-01	2/2	NA	1.5E+000		4.3E-001			YES	FD, ARV
7440393	Barium	6.9E+001		6.9E+001		mg/kg	ACS-SD-02-01	1/2	5.0E+001	6.9E+001		5.5E+003			YES	FD
7440417	Beryllium	1.7E-001	J	3.2E-001	J	mg/kg	ACS-SD-02-01	2/2	NA	3.2E-001		1.6E+002			YES	FD
111444	bis(2-Ethylhexyl)phthalate	3.5E-001		1.3E+001		mg/kg	ACS-SD-02-01	2/2	NA	1.3E+001		4.6E+001			YES	FD
85687	Butylbenzylphthalate	1.6E-001		1.6E-001		mg/kg	ACS-SD-02-01	1/2	3.3E-001	1.6E-001		1.6E+004			YES	FD
7440439	Cadmium	8.0E-002	J	1.3E+000	J	mg/kg	ACS-SD-02-01	2/2	NA	1.3E+000		3.9E+001			YES	FD
7440702	Calcium	9.9E+003	J	1.1E+004	J	mg/kg	ACS-SD-02-01	2/2	NA	1.1E+004					NO	NTX
67663	Chloroform	2.0E-003		2.0E-003		mg/kg	ACS-SD-01-01	2/2	NA	2.0E-003		1.0E+002			YES	FD
18540299	Chromium (total)	7.3E+000	J	2.1E+001	J	mg/kg	ACS-SD-02-01	2/2	NA	2.1E+001		3.9E+002			YES	FD
7440508	Copper	6.3E+000		2.4E+001		mg/kg	ACS-SD-02-01	2/2	NA	2.4E+001		3.1E+003			YES	FD
84742	Di-n-butylphthalate	1.7E-001		1.7E-001		mg/kg	ACS-SD-02-01	1/2	3.3E-001	1.7E-001		7.8E+003			YES	FD
7439896	Iron	3.3E+003		4.7E+003		mg/kg	ACS-SD-02-01	2/2	NA	4.7E+003		2.3E+004			YES	FD
7439921	Lead	8.2E+000	J	2.8E+002	J	mg/kg	ACS-SD-02-01	2/2	NA	2.8E+002		4.0E+002			YES	FD
7439954	Magnesium	2.7E+003		4.4E+003		mg/kg	ACS-SD-01-01	2/2	NA	4.4E+003					NO	NTX
7439965	Manganese	7.6E+001		2.2E+002		mg/kg	ACS-SD-02-01	2/2	NA	2.2E+002		1.6E+003			YES	FD
7439976	Mercury	7.1E-001		7.1E-001		mg/kg	ACS-SD-02-01	1/2	5.0E-002	7.1E-001		**			NO	NTX
108952	Phenol	1.9E-001		1.9E-001		mg/kg	ACS-SD-02-01	1/2	3.3E-001	1.9E-001		4.7E+004			YES	FD
7440097	Potassium	3.4E+002	J	4.0E+002	J	mg/kg	ACS-SD-02-01	2/2	NA	4.0E+002					NO	NTX
	Solids, total	7.8E+001		7.8E+001		mg/kg	ACS-SD-02-01	1/2	NA	7.8E+001					NO	NTX
108883	Toluene	3.0E-003		3.0E-003		mg/kg	ACS-SD-02-01	1/2	5.0E-003	3.0E-003		1.6E+004			YES	FD
7440622	Vanadium	4.5E+000	J	6.2E+000	J	mg/kg	ACS-SD-02-01	2/2	NA	6.2E+000		5.5E+002			YES	FD
7440666	Zinc	2.0E+001		1.1E+002		mg/kg	ACS-SD-02-01	2/2	NA	1.1E+002		2.3E+004			YES	FD

* Chemicals not detected in all samples are not included in this table.

** Mercury does not have oral toxicity information. It does have inhalation toxicity information, however, inhalation is not evaluated for sediments this study area.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1996. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Value (ARV)
Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-6-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 2
Exposure Medium:	Sediment
Exposure Point:	Ditch

File: SDA2EX.WK4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
105679	2,4-Dimethylphenol	6.1E-001		6.1E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	6.1E-001		1.6E+003			YES	FD
91576	2-Methylnaphthalene	1.6E-001		1.6E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	1.6E-001		3.1E+003			YES	FD
7005723	4-Chlorophenyl-phenyl ether	7.5E-002		7.5E-002		mg/kg	ACS-SD-05-01	1/2	3.3E-001	7.5E-002					NO	NTX
7429905	Aluminum	4.0E+003		4.9E+003		mg/kg	ACS-SD-05-01	2/2	NA	4.9E+003		7.8E+004			YES	FD
120127	Anthracene	8.3E-002		8.3E-002		mg/kg	ACS-SD-05-01	1/2	3.3E-001	8.3E-002		2.3E+004			YES	FD
7440382	Arsenic	5.7E+000		1.0E+001		mg/kg	ACS-SD-05-01	2/2	NA	1.0E+001		4.3E-001			YES	FD, ARV
7440393	Barium	9.1E+001		9.1E+001		mg/kg	ACS-SD-05-01	1/2	7.4E+001	9.1E+001		5.5E+003			YES	FD
71432	Benzene	1.4E+001	J	1.4E+001	J	mg/kg	ACS-SD-05-01	1/2	5.0E-003	1.4E+001		2.2E+001			YES	FD
56553	Benzo(a)anthracene	7.8E-002		7.1E-001		mg/kg	ACS-SD-05-01	2/2	NA	7.1E-001		8.7E-001			YES	FD
50328	Benzo(a)pyrene	6.3E-002		6.9E-001		mg/kg	ACS-SD-05-01	2/2	NA	6.9E-001		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	1.6E-001		6.0E-001		mg/kg	ACS-SD-05-01	2/2	NA	6.0E-001		8.7E-001			YES	FD
191242	Benzo(g,h,i)perylene	4.6E-001		4.6E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	4.6E-001					NO	NTX
207089	Benzo(k)fluoranthene	1.7E-001	J	6.9E-001		mg/kg	ACS-SD-05-01	2/2	NA	6.9E-001		8.7E+000			YES	FD
7440417	Beryllium	2.2E-001		4.7E-001	J	mg/kg	ACS-SD-05-01	2/2	NA	4.7E-001		1.6E+002			YES	FD
111444	bis(2-Chloroethyl) ether	5.6E-001	J	5.6E-001	J	mg/kg	ACS-SD-05-01	1/2	3.3E-001	5.6E-001		5.8E-001			YES	FD
111444	bis(2-Ethylhexyl)phthalate	4.4E+000		4.4E+000		mg/kg	ACS-SD-05-01	1/2	5.1E-001	4.4E+000		4.6E+001			YES	FD
85687	Butylbenzylphthalate	1.7E-001		1.7E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	1.7E-001		1.6E+004			YES	FD
7440439	Cadmium	3.9E-001		2.3E+000	J	mg/kg	ACS-SD-05-01	2/2	NA	2.3E+000		3.9E+001			YES	FD
7440702	Calcium	1.6E+003		7.3E+004	J	mg/kg	ACS-SD-05-01	2/2	NA	7.3E+004					NO	NTX
67663	Chloroform	3.0E-003		3.0E-003		mg/kg	ACS-SD-05-01	1/2	5.0E-003	3.0E-003		1.0E+002			YES	FD
18540299	Chromium (total)	5.4E+000	J	2.9E+001	J	mg/kg	ACS-SD-05-01	2/2	NA	2.9E+001		3.9E+002			YES	FD
218019	Chrysene	7.7E-002		6.9E-001		mg/kg	ACS-SD-05-01	2/2	NA	6.9E-001		8.7E+001			YES	FD
7440508	Copper	3.7E+001		3.7E+001		mg/kg	ACS-SD-05-01	1/2	7.4E+000	3.7E+001		3.1E+003			YES	FD
53703	Dibenzo(a,h)anthracene	1.6E-001		1.6E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	1.6E-001		8.7E-002			YES	FD, ARV
100414	Ethyl Benzene	1.3E-001		1.3E-001		mg/kg	ACS-SD-05-01	1/2	5.0E-003	1.3E-001		7.8E+003			YES	FD
206440	Fluoranthene	6.2E-002		1.0E+000		mg/kg	ACS-SD-05-01	2/2	NA	1.0E+000		3.1E+003			YES	FD
193395	Indeno(1,2,3-cd)pyrene	3.8E-001		3.8E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	3.8E-001		8.7E-001			YES	FD
7439896	Iron	1.1E+004		1.4E+004		mg/kg	ACS-SD-05-01	2/2	NA	1.4E+004		2.3E+004			YES	FD
7439921	Lead	2.3E+001		1.5E+002	J	mg/kg	ACS-SD-05-01	2/2	NA	1.5E+002		4.0E+002			YES	FD
7439954	Magnesium	6.5E+002		1.8E+004		mg/kg	ACS-SD-05-01	2/2	NA	1.8E+004					NO	NTX
7439965	Manganese	5.3E+001		3.7E+002		mg/kg	ACS-SD-05-01	2/2	NA	3.7E+002		1.6E+003			YES	FD
7439976	Mercury	1.3E-001		1.3E-001		mg/kg	ACS-SD-05-01	1/2	1.6E-001	1.3E-001					YES	NTX
91203	Naphthalene	1.1E-001		1.1E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	1.1E-001		3.1E+003			YES	FD
7440020	Nickel	1.4E+001		1.4E+001		mg/kg	ACS-SD-05-01	1/2	1.5E+001	1.4E+001		1.6E+003			YES	FD
85018	Phenanthrene	4.4E-001		4.4E-001		mg/kg	ACS-SD-05-01	1/2	3.3E-001	4.4E-001					NO	NTX
7439921	Potassium	2.9E+002		1.2E+003	J	mg/kg	ACS-SD-05-01	2/2	NA	1.2E+003					NO	NTX
129000	Pyrene	7.1E-002		1.1E+000		mg/kg	ACS-SD-05-01	2/2	NA	1.1E+000		2.3E+003			YES	FD

TABLE 2-6-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 2
Exposure Medium:	Sediment
Exposure Point:	Ditch

File: SDA2EX.WK4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
	Solids, total	5.4E+001		6.8E+001		mg/kg	ACS-SD-05-01	2/2	NA	6.8E+001					NO	NTX
108883	Toluene	5.6E-002		5.6E-002		mg/kg	ACS-SD-05-01	1/2	5.0E-003	5.6E-002		1.6E+004			YES	FD
7440622	Vanadium	6.5E+000		1.4E+001	J	mg/kg	ACS-SD-05-01	2/2	NA	1.4E+001		5.5E+002			YES	FD
1330207	Xylenes (total)	2.0E-001		2.0E-001		mg/kg	ACS-SD-05-01	1/2	5.0E-003	2.0E-001		1.6E+005			YES	FD
7440666	Zinc	8.7E+001		1.2E+002		ug/kg	ACS-SD-05-01	2/2	NA	1.2E+002		2.3E+004			YES	FD

* Chemicals not detected in all samples are not included in this table.

** Mercury does not have oral toxicity info. but does have inhalation toxicity info.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Value (ARV)
Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-6-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4a
Exposure Medium:	Sediment
Exposure Point:	Wetland

File: SDA4AEX.WK4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	3.0E-003		3.0E-003		mg/kg	ACS-SD-11-01	1/32	0.006-3.8	3.0E-003		1.6E+003	N/A	N/A	NO	IFD
540590	1,2-Dichloroethene (total)	6.0E-003		6.0E-003		mg/kg	ACS-SD-10-01	1/32	0.006-3.8	6.0E-003		7.0E+002	N/A	N/A	NO	IFD
108601	2,2'-oxybis(1-Chloropropane)	5.4E-002		1.8E+000	J	mg/kg	ACS-SD-12-01	5/26	0.33-9.1	1.8E+000		9.1E+000	N/A	N/A	YES	FD
78933	2-Butanone	5.0E-003		7.4E-002		mg/kg	APD-SD-33-01-RE	9/32	0.01-3.8	7.4E-002		4.7E+004	N/A	N/A	YES	FD
91576	2-Methylnaphthalene	5.5E-002		3.8E-001		mg/kg	ACS-SD-07A-01	3/26	0.33-9.1	3.8E-001		3.1E+003	N/A	N/A	YES	FD
106445	4-Methylphenol	1.0E-001		1.1E-001		mg/kg	APD-SD-36-01	2/26	0.33-9.1	1.1E-001		3.9E+002	N/A	N/A	YES	FD
208968	Acenaphthylene	1.1E-001		3.7E-001		mg/kg	SD22-AVG	2/26	0.33-9.1	3.7E-001			N/A	N/A	NO	NTX
67641	Acetone	1.2E-002		2.3E-001		mg/kg	APD-SD-33-01-RE	19/32	0.010-3.8	2.3E-001		7.8E+003	N/A	N/A	YES	FD
7429905	Aluminum	2.5E+003		1.0E+004		mg/kg	ACS-SD-16-01	9/9	NA	1.0E+004		7.8E+004	N/A	N/A	YES	FD
120127	Anthracene	6.9E-002		2.7E-001		mg/kg	SD22-AVG	3/26	0.33-9.1	2.7E-001		2.3E+004	N/A	N/A	YES	FD
7440360	Antimony	2.8E+000	J	2.8E+000	J	mg/kg	ACS-SD-16-01	1/4	1.6-2.4	2.8E+000		3.1E+001	N/A	N/A	YES	FD
12672296	Aroclor-1248	1.8E-003		9.9E+001		mg/kg	APD-SD-T2 (C) (0_5)	75/107	0.036-0	9.9E+001		3.2E-001	N/A	N/A	YES	FD, ARV
11097691	Aroclor-1254	2.6E-003		2.0E+002		mg/kg	APD-SD-T2 (C) (0_5)	88/107	0.036-0.2	2.0E+002		3.2E-001	N/A	N/A	YES	FD, ARV
11096825	Aroclor-1260	6.9E-003		6.0E+001		mg/kg	APD-SD-T2 (C) (0_5)	74/106	0.0360-0.53	6.0E+001		3.2E-001	N/A	N/A	YES	FD, ARV
7440382	Arsenic	1.1E+000		2.9E+001		mg/kg	APD-SD-21-01	28/28	NA	2.9E+001		4.3E-001	N/A	N/A	YES	FD, ARV
7440393	Barium	6.3E+001		8.0E+001		mg/kg	ACS-SD-16-01	3/9	49.1-96.5	8.0E+001		5.5E+003	N/A	N/A	YES	FD
71432	Benzene	2.3E-002		1.1E+001		mg/kg	APD-SD-38-01	3/32	0.005-0.056	1.1E+001		2.2E+001	N/A	N/A	YES	FD
56553	Benzo(a)anthracene	7.1E-002		9.2E-001		mg/kg	SD22-AVG	9/26	0.33-9.1	9.2E-001		8.7E-001	N/A	N/A	YES	FD, ARV
50328	Benzo(a)pyrene	7.3E-002		1.2E+000		mg/kg	SD22-AVG	10/26	0.33-9.1	1.2E+000		8.7E-002	N/A	N/A	YES	FD, ARV
205992	Benzo(b)fluoranthene	7.3E-002		1.5E+000	J	mg/kg	ACS-SD-07A-01	13/26	0.33-9.1	1.5E+000		8.7E-001	N/A	N/A	YES	FD, ARV
191242	Benzo(g,h,i)perylene	1.2E-001		5.5E-001		mg/kg	ACS-SD-07A-01	5/26	0.33-9.1	5.5E-001			N/A	N/A	NO	NTX
207089	Benzo(k)fluoranthene	7.3E-002		1.5E+000		mg/kg	ACS-SD-07A-01	9/26	0.33-9.1	1.5E+000		8.7E+000	N/A	N/A	YES	FD
65850	Benzoic Acid	3.6E-001		1.2E+000	J	mg/kg	ACS-SD-07A-01	4/9	1.6	1.2E+000		3.1E+005	N/A	N/A	YES	FD
7440417	Beryllium	8.0E-002	J	1.0E+000	J	mg/kg	ACS-SD-04-01	9/9	NA	1.0E+000		1.6E+002	N/A	N/A	YES	FD
111444	bis(2-Chloroethyl) ether	2.0E-001		4.3E-001		mg/kg	ACS-SD-10-01	2/26	0.33-9.1	4.3E-001		5.8E-001	N/A	N/A	YES	FD
111444	bis(2-Ethylhexyl)phthalate	1.0E-001		4.6E+000		mg/kg	APD-SD-33-01	13/26	0.33-1.5	4.6E+000		4.6E+001	N/A	N/A	YES	FD
7440439	Cadmium	4.5E-001	J	1.1E+001		mg/kg	APD-SD-21-01	26/28	0.06	1.1E+001		3.9E+001	N/A	N/A	YES	FD
7440702	Calcium	7.6E+002	J	5.8E+004	J	mg/kg	ACS-SD-07C-01	9/9	NA	5.8E+004			N/A	N/A	NO	NTX
75003	Chloroethane	2.4E-002		4.0E-002		mg/kg	ACS-SD-10-01	2/32	0.01-3.8	4.0E-002		2.2E+002	N/A	N/A	YES	FD
67663	Chloroform	2.0E-003		2.0E-003		mg/kg	ACS-SD-03-01	2/32	0.006-3.8	2.0E-003		1.0E+002	N/A	N/A	YES	FD
18540299	Chromium (total)	4.3E+000	J	2.9E+002		mg/kg	APD-SD-33-01	28/28	NA	2.9E+002		3.9E+002	N/A	N/A	YES	FD
218019	Chrysene	6.4E-002		1.1E+000		mg/kg	SD22-AVG	12/26	0.33-9.1	1.1E+000		8.7E+001	N/A	N/A	YES	FD
7440508	Copper	3.7E+000		3.6E+002		mg/kg	ACS-SD-16-01	26/28	4.9	3.6E+002		3.1E+003	N/A	N/A	YES	FD
84742	Di-n-butylphthalate	9.4E-002		1.0E+000		mg/kg	APD-SD-21-01	3/26	0.33-9.1	1.0E+000		7.8E+003	N/A	N/A	YES	FD
53703	Dibenzo(a,h)anthracene	2.0E-001		3.7E-001		mg/kg	SD22-AVG	2/26	0.33-9.1	3.7E-001		8.7E-002	N/A	N/A	YES	FD, ARV
132649	Dibenzofuran	2.3E-001		2.3E-001		mg/kg	ACS-SD-07A-01	1/26	0.33-9.1	2.3E-001		3.1E+002	N/A	N/A	NO	IFD
84662	Diethylphthalate	1.9E+000		1.9E+000		mg/kg	APD-SD-38-01	1/26	0.33-9.1	1.9E+000		6.3E+004	N/A	N/A	NO	IFD

(((

TABLE 2-6-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4a
Exposure Medium:	Sediment
Exposure Point:	Wetland

File: SDA4AEX.WK4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
206440	Fluoranthene	8.4E-002		8.2E-001		mg/kg	ACS-SD-07A-01	14/26	0.33-9.1	8.2E-001		3.1E+003	N/A	N/A	YES	FD
118741	Hexachlorobenzene	1.4E-001		1.4E-001		mg/kg	ACS-SD-16-01	1/26	0.33-9.1	1.4E-001		4.0E-001	N/A	N/A	NO	IFD
193395	Indeno(1,2,3-cd)pyrene	4.6E-002		5.6E-001		mg/kg	SD22-AVG	10/26	0.33-9.1	5.6E-001		8.7E-001	N/A	N/A	YES	FD
7439896	Iron	9.5E+001	S	2.1E+004	J	mg/kg	ACS-SD-07A-01	10/10	NA	2.1E+004		2.3E+004	N/A	N/A	YES	FD
78591	Isophorone	4.2E-002		4.2E-002		mg/kg	APD-SD-26-01	1/26	0.33-9.1	4.2E-002		6.7E+002	N/A	N/A	NO	IFD
7439921	Lead	3.6E+000	J	7.0E+002		mg/kg	ACS-SD-16-01	27/27	NA	7.0E+002		4.0E+002	N/A	N/A	YES	FD, ARV
7439954	Magnesium	4.4E+002	J	2.2E+004	J	mg/kg	ACS-SD-07C-01	7/9	687	2.2E+004			N/A	N/A	NO	NTX
7439965	Manganese	2.3E+001		4.0E+002	J	mg/kg	ACS-SD-07C-01	9/9	NA	4.0E+002		1.6E+003	N/A	N/A	YES	FD
7439976	Mercury	8.0E-002	J	8.9E+000	J	mg/kg	APD-SD-33-01	30/56	0.05-0.43	8.9E+000		**	N/A	N/A	YES	NTX
75092	Methylene Chloride	6.0E-003		4.4E-002	J	mg/kg	ACS-SD-07B-01	2/32	0.013-3.8	4.4E-002		8.5E+001	N/A	N/A	YES	FD
91203	Naphthalene	5.9E-002		4.2E-001		mg/kg	ACS-SD-07A-01	3/26	0.33-9.1	4.2E-001		3.1E+003	N/A	N/A	YES	FD
7440020	Nickel	1.6E+001		2.7E+001		mg/kg	ACS-SD-07C-01	3/9	9.8-19.1	2.7E+001		1.6E+003	N/A	N/A	YES	FD
87865	Pentachlorophenol	2.3E-001		2.3E-001		mg/kg	ACS-SD-07B-01	1/26	1-22	2.3E-001		5.3E+000	N/A	N/A	NO	IFD
85018	Phenanthrene	6.6E-002		6.6E-001		mg/kg	ACS-SD-07A-01	9/26	0.33-9.1	6.6E-001			N/A	N/A	NO	NTX
108952	Phenol	5.8E-002		5.8E-002		mg/kg	ACS-SD-12-01	1/26	0.33-9.1	5.8E-002		4.7E+004	N/A	N/A	NO	IFD
7440097	Potassium	2.0E+002		1.6E+003	J	mg/kg	ACS-SD-07C-01	9/9	NA	1.6E+003			N/A	N/A	NO	NTX
129000	Pyrene	6.3E-002		8.1E-001		mg/kg	SD22-AVG	12/26	0.33-9.1	8.1E-001		2.3E+003	N/A	N/A	YES	FD
7782492	Selenium	8.7E-001		1.1E+000		mg/kg	ACS-SD-12-01	3/9	0.49-0.72	1.1E+000		3.9E+002	N/A	N/A	YES	FD
	Solids, total	4.2E+001		8.1E+001		mg/kg	ACS-SD-03-01	9/9	NA	8.1E+001			N/A	N/A	NO	NTX
7440280	Thallium	1.4E+000		1.4E+000		mg/kg	ACS-SD-16-01	1/9	0.96-1.6	1.4E+000		5.5E+000	N/A	N/A	YES	FD
108883	Toluene	5.0E-003		1.1E-001		mg/kg	ACS-SD-04-01	4/32	0.005-3.8	1.1E-001		1.6E+004	N/A	N/A	YES	FD
7440622	Vanadium	5.1E+000	J	4.8E+001	J	mg/kg	ACS-SD-04-01	9/9	NA	4.8E+001		5.5E+002	N/A	N/A	YES	FD
7440666	Zinc	6.4E+000		4.7E+002		mg/kg	APD-SD-26-01	28/28	NA	4.7E+002		2.3E+004	N/A	N/A	YES	FD

* Chemicals not detected in all samples are not included in this table.

** Mercury does not have oral toxicity info. but does have inhalation toxicity info.

(1) Minimum/maximum detected concentration.

(2) No Background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1996. Contaminants were not screened out based upon toxicity.

(4) *Rationale Codes* *Selection Reason:*

Infrequent Detection but Associated Historically (HIST)

Frequent Detection (FD)

Toxicity Information Available (TX)

Above Reference Value (ARV)

Deletion Reason: *Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)*

Background Levels (BKG)

No Toxicity Information (NTX)

Definitions:

NA = Not Applicable and/or Available

SQL = Sample Quantitation Limit

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered

MCL = Federal Maximum Contaminant Level

SMCL = Secondary Maximum Contaminant Level

J = Estimated Value

C = Carcinogenic

N = Non-Carcinogenic

TABLE 2-6-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4B
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA4BEX.WK4

CAS Number	Chemical*	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
540590	1,2-Dichloroethene (total)	1.2E-002		1.2E-002		mg/kg	APD-SD-30-01	1/3	0.015-0.022	1.2E-002		7.0E+002			YES	FD
91576	2-Methylnaphthalene	3.1E-002	J	3.1E-002	J	mg/kg	ACS-ST01-001	1/6	0.49-1.4	3.1E-002		3.1E+003			YES	FD
72548	4,4'-DDD	7.8E-002	J	7.8E-002	J	mg/kg	ACS-ST11-101	1/6	0.007-0.14	7.8E-002		2.7E+000			YES	FD
72559	4,4'-DDE	2.9E-001	J	2.9E-001	J	mg/kg	ACS-ST11-101	1/6	0.007-0.14	2.9E-001		1.9E+000			YES	FD
50293	4,4'-DDT	2.4E-001	J	2.4E-001	J	mg/kg	ACS-ST11-101	1/6	0.007-0.14	2.4E-001		1.9E+000			YES	FD
208968	Acenaphthylene	5.2E-002	J	2.8E-001		mg/kg	SD29-AVG	3/6	0.56-0.72	2.8E-001					NO	NTX
67641	Acetone	1.4E-002		2.5E-002		mg/kg	APD-SD-30-01	2/3	0.022	2.5E-002		7.8E+003			YES	FD
57749	alpha-Chlordane	2.2E-001	J	2.2E-001	J	mg/kg	ACS-ST11-101	1/6	0.0036-0.07	2.2E-001		1.8E+000			YES	FD
120127	Anthracene	6.8E-002	J	2.6E-001		mg/kg	SD29-AVG	3/6	0.56-0.72	2.6E-001		2.3E+004			YES	FD
12672296	Aroclor-1248	7.4E-002		2.2E-001		mg/kg	APD-SD-28-01	3/6	0.49-1.4	2.2E-001		3.2E-001			YES	FD
11097691	Aroclor-1254	4.2E-001		8.8E+000		mg/kg	ACS-ST11-101	4/6	0.49-1.4	8.8E+000		3.2E-001			YES	FD, ARV
11096825	Aroclor-1260	3.9E-001		9.7E-001		mg/kg	APD-SD-28-01	3/6	0.49-1.4	9.7E-001		3.2E-001			YES	FD, ARV
7440382	Arsenic	3.3E+000		7.6E+000		mg/kg	APD-SD-28-01	3/3	NA	7.6E+000		4.3E-001			YES	FD, ARV
56553	Benzo(a)anthracene	4.7E-002	J	3.6E-001		mg/kg	SD29-AVG	5/6	0.7	3.6E-001		8.7E-001			YES	FD
50328	Benzo(a)pyrene	6.9E-002	J	4.0E-001		mg/kg	SD29-AVG	5/6	0.7	4.0E-001		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	1.0E-001	J	4.4E-001		mg/kg	SD29-AVG	6/6	NA	4.4E-001		8.7E-001			YES	FD
191242	Benzo(g,h,i)perylene	7.7E-002	J	3.0E-001		mg/kg	SD29-AVG	4/6	0.7-0.72	3.0E-001					NO	NTX
207089	Benzo(k)fluoranthene	5.8E-002	J	4.1E-001		mg/kg	SD29-AVG	4/6	0.7-0.72	4.1E-001		8.7E+000			YES	FD
319857	beta-BHC	2.6E-002	J	2.6E-002	J	mg/kg	ACS-ST11-101	1/6	0.0036-0.07	2.6E-002		3.5E-001			YES	FD
111444	bis(2-Ethylhexyl)phthalate	4.9E-001		4.0E+000		mg/kg	ACS-ST11-101	4/6	0.48-1.4	4.0E+000		4.6E+001			YES	FD
7440439	Cadmium	2.0E+000		5.9E+000		mg/kg	APD-SD-28-01	3/3	NA	5.9E+000		3.9E+001			YES	FD
86748	Carbazole	3.6E-002	J	3.6E-002	J	mg/kg	ACS-ST01-001	1/6	0.49-1.4	3.6E-002		3.2E+001			YES	FD
16540299	Chromium (total)	9.9E+000		3.3E+001		mg/kg	APD-SD-28-01	3/3	NA	3.3E+001		3.9E+002			YES	FD
218019	Chrysene	7.9E-002	J	3.9E-001		mg/kg	SD29-AVG	6/6	NA	3.9E-001		8.7E+001			YES	FD
7440508	Copper	9.4E+000		3.7E+001		mg/kg	APD-SD-28-01	3/3	NA	3.7E+001		3.1E+003			YES	FD
84742	Di-n-butylphthalate	8.4E-002	J	8.4E-002	J	mg/kg	ACS-ST11-101	1/6	0.48-1.4	8.4E-002		7.8E+003			YES	FD
53703	Dibenzo(a,h)anthracene	6.3E-002	J	2.9E-001		mg/kg	SD29-AVG	3/6	0.56-0.72	2.9E-001		8.7E-002			YES	FD, ARV
115297	Endosulfan I	3.9E-001	J	3.9E-001	J	mg/kg	ACS-ST11-101	1/6	0.0036-0.07	3.9E-001		4.7E+002			YES	FD
	Endosulfan sulfate	6.0E-002	J	6.0E-002	J	mg/kg	ACS-ST11-101	1/6	0.007-0.14	6.0E-002					NO	NTX
72208	Endrin	1.5E-001	J	1.5E-001	J	mg/kg	ACS-ST11-101	1/6	0.007-0.14	1.5E-001		2.3E+001			YES	FD
206440	Fluoranthene	7.0E-002	J	4.0E-001		mg/kg	SD29-AVG	6/6	NA	4.0E-001		3.1E+003			YES	FD
58899	gamma-BHC	2.9E-002	J	2.9E-002	J	mg/kg	ACS-ST11-101	1/6	0.0036-0.07	2.9E-002		4.9E-001			YES	FD
57749	gamma-Chlordane	4.8E-002	J	4.8E-002	J	mg/kg	ACS-ST11-101	1/6	0.0036-0.07	4.8E-002		1.8E+000			YES	FD
76448	Heptachlor	6.2E-002	J	6.2E-002	J	mg/kg	ACS-ST11-101	1/6	0.0036-0.07	6.2E-002		1.4E-001			YES	FD
193395	Indeno(1,2,3-cd)pyrene	5.4E-002	J	3.4E-001		mg/kg	SD29-AVG	5/6	0.7	3.4E-001		8.7E-001			YES	FD
78591	Isophorone	4.2E-002	J	4.2E-002	J	mg/kg	ACS-ST11-101	1/6	0.48-1.4	4.2E-002		6.7E+002			YES	FD
7139921	Lead	4.8E+001		1.4E+002		mg/kg	APD-SD-28-01	3/3	NA	1.4E+002		4.0E+002			YES	FD
7439976	Mercury	1.1E-001	J	4.5E-001	J	mg/kg	APD-SD-28-01	3/3	NA	4.5E-001		**			YES	NTX

TABLE 2-6-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4B
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA4BEX.WK4

CAS Number	Chemical*	Minimum (1) Concentration	Minimum Qualifier	Maximum (1) Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
72435	Methoxychlor	2.9E-001	J	2.9E-001	J	mg/kg	ACS-ST11-101	1/6	0.036-0.7	2.9E-001		3.9E+002			YES	FD
91203	Naphthalene	2.5E-002	J	2.5E-002	J	mg/kg	ACS-ST01-001	1/6	0.49-1.4	2.5E-002		3.1E+003			YES	FD
85018	Phenanthrene	3.6E-002	J	1.5E-001	J	mg/kg	ACS-ST02-001	4/6	0.49-0.72	1.5E-001					NO	NTX
129000	Pyrene	1.0E-001		3.9E-001		mg/kg	SD29-AVG	6/6	NA	3.9E-001		2.3E+003			YES	FD
7440666	Zinc	7.9E+001		3.0E+002		mg/kg	APD-SD-28-01	3/3	NA	3.0E+002		2.3E+004			YES	FD

* Chemicals not detected in all samples are not included in this table.

** Mercury does not have oral toxicity information. It does have inhalation toxicity information, however, inhalation is not evaluated for sediments this study area.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)

Frequent Detection (FD)

Toxicity Information Available (TX)

Above Reference Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)

No Toxicity Information (NTX)

Definitions:

NA = Not Applicable and/or Available

SQL = Sample Quantitation Limit

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered

MCL = Federal Maximum Contaminant Level

SMCL = Secondary Maximum Contaminant Level

J = Estimated Value

C = Carcinogenic

N = Non-Carcinogenic

TABLE 2-6-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 6
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA6EX.WK4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
78933	2-Butanone	1.1E-002		1.1E-002		mg/kg	ACS-SD-14-01	1/3	0.01	1.1E-002		4.7E+004			YES	FD
106445	4-Methylphenol	2.6E-002	J	2.7E-001		mg/kg	ACS-SD-13-01	2/10	0.33-0.95	2.7E-001		3.9E+002			YES	FD
83329	Acenaphthene	2.3E-001	J	2.3E-001	J	mg/kg	ACS-ST08-001	1/10	0.44-1.6	2.3E-001		4.7E+003			YES	FD
208968	Acenaphthylene	3.8E-002	J	3.8E-002	J	mg/kg	ACS-ST05-001	1/10	0.33-0.95	3.8E-002					NO	NTX
7429905	Aluminum	6.7E+003		1.6E+004		mg/kg	ACS-SD-14-01	3/3	NA	1.6E+004		7.8E+004			YES	FD
120127	Anthracene	5.3E-002	J	6.1E-001	J	mg/kg	ACS-ST08-001	3/10	0.33-0.65	6.1E-001		2.3E+004			YES	FD
7440360	Antimony	5.1E+000	J	5.1E+000	J	mg/kg	ACS-SD-06-01	1/3	2-3.7	5.1E+000		3.1E+001			YES	FD
7440382	Arsenic	5.9E+000		2.3E+001		mg/kg	ACS-SD-13-01	3/3	NA	2.3E+001		4.3E-001			YES	FD, ARV
7440393	Barium	7.4E+001		1.1E+002		mg/kg	ACS-SD-14-01	2/3	148	1.1E+002		5.5E+003			YES	FD
56553	Benzo(a)anthracene	4.8E-002	J	3.2E+000		mg/kg	ACS-ST08-001	7/10	0.33-0.57	3.2E+000		8.7E-001			YES	FD, ARV
50328	Benzo(a)pyrene	2.6E-002	J	4.0E+000		mg/kg	ACS-ST08-001	7/10	0.33-0.57	4.0E+000		8.7E-002			YES	FD, ARV
205992	Benzo(b)fluoranthene	2.7E-002	J	4.8E+000		mg/kg	ACS-ST08-001	8/10	0.53-0.57	4.8E+000		8.7E-001			YES	FD, ARV
191242	Benzo(g,h,i)perylene	3.0E-002	J	3.2E+000		mg/kg	ACS-ST08-001	5/10	0.33-0.57	3.2E+000					NO	NTX
207089	Benzo(k)fluoranthene	4.6E-002	J	3.2E+000		mg/kg	ACS-ST08-001	8/10	0.53-0.57	3.2E+000		8.7E+000			YES	FD
65850	Benzoic Acid	2.0E-001		7.3E-001		mg/kg	ACS-SD-06-01	2/3	1.6	7.3E-001		3.1E+005			YES	FD
7440417	Beryllium	6.2E-001		7.2E-001	J	mg/kg	ACS-SD-06-01	3/3	NA	7.2E-001		1.6E+002			YES	FD
111444	bis(2-Ethylhexyl)phthalate	1.8E-001		8.2E-001		mg/kg	ACS-SD-14-01	2/10	0.33-0.95	8.2E-001		4.6E+001			YES	FD
7440439	Cadmium	7.4E-001	J	9.0E-001	J	mg/kg	ACS-SD-13-01	3/3	NA	9.0E-001		3.9E+001			YES	FD
7440702	Calcium	7.6E+003	J	4.4E+004	J	mg/kg	ACS-SD-06-01	3/3	NA	4.4E+004					NO	NTX
86748	Carbazole	7.5E-002	J	6.0E-001	J	mg/kg	ACS-ST08-001	2/7	0.44-0.65	6.0E-001		3.2E+001			YES	FD
67663	Chloroform	8.0E-003		8.0E-003		mg/kg	ACS-SD-06-01	1/3	0.005	8.0E-003		1.0E+002			YES	FD
18540299	Chromium (total)	1.3E+001		3.2E+001		mg/kg	ACS-SD-14-01	3/3	NA	3.2E+001		3.9E+002			YES	FD
218019	Chrysene	3.3E-002	J	4.4E+000		mg/kg	ACS-ST08-001	7/10	0.33-0.57	4.4E+000		6.7E+001			YES	FD
7440508	Copper	2.7E+001		4.2E+001		mg/kg	ACS-SD-14-01	3/3	NA	4.2E+001		3.1E+003			YES	FD
84742	Di-n-butylphthalate	4.4E-002	J	6.6E-002	J	mg/kg	ACS-ST09-001	2/10	0.33-0.95	6.6E-002		7.8E+003			YES	FD
53703	Dibenzo(a,h)anthracene	3.4E-002	J	9.3E-001	J	mg/kg	ACS-ST08-001	3/10	0.33-0.65	9.3E-001		8.7E-002			YES	FD, ARV
132649	Dibenzofuran	1.1E-001	J	1.1E-001	J	mg/kg	ACS-ST08-001	1/10	0.33-0.95	1.1E-001		3.1E+002			YES	FD
206440	Fluoranthene	3.7E-002	J	1.9E+000		mg/kg	ACS-ST09-001	6/9	0.33-0.57	1.9E+000		3.1E+003			YES	FD
86737	Fluorene	2.3E-001	J	2.3E-001	J	mg/kg	ACS-ST08-001	1/10	0.33-0.95	2.3E-001		3.1E+003			YES	FD
76448	Heptachlor	2.5E-003	J	2.5E-003	J	mg/kg	ACS-ST08-001	1/10	0.008-0.049	2.5E-003		1.4E-001			YES	FD
193395	Indeno(1,2,3-cd)pyrene	3.7E-002	J	2.6E+000		mg/kg	ACS-ST08-001	4/10	0.33-0.57	2.6E+000		8.7E-001			YES	FD, ARV
7439896	Iron	1.9E+004		3.5E+004		mg/kg	ACS-SD-14-01	3/3	NA	3.5E+004		2.3E+004			YES	FD, ARV
7139921	Lead	5.9E+001		9.0E+001	J	mg/kg	ACS-SD-06-01	3/3	NA	9.0E+001		4.0E+002			YES	FD
7439954	Magnesium	1.2E+003	J	2.0E+004	J	mg/kg	ACS-SD-14-01	3/3	NA	2.0E+004					NO	NTX
7439965	Manganese	1.1E+002		4.2E+002		mg/kg	ACS-SD-14-01	3/3	NA	4.2E+002		1.6E+003			YES	FD
91203	Naphthalene	2.6E-001	J	2.6E-001	J	mg/kg	ST04-AVG	1/10	0.33-0.95	2.6E-001		3.1E+003			YES	FD
7440020	Nickel	3.1E+001		4.1E+001		mg/kg	ACS-SD-06-01	2/3	29.6	4.1E+001		1.6E+003			YES	FD
85018	Phenanthrene	3.1E-002	J	4.7E+000		mg/kg	ACS-ST08-001	7/10	0.33-0.57	4.7E+000					NO	NTX

TABLE 2-6-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 6
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA6EX.WK4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
740097	Potassium	5.5E+002		2.9E+003		mg/kg	ACS-SD-14-01	3/3	NA	2.9E+003					NO	NTX
129000	Pyrene	3.6E-002	J	1.6E+000		mg/kg	ACS-ST09-001	6/9	0.33-0.57	1.6E+000		2.3E+003			YES	FD
	Solids, total	2.7E+001		5.9E+001		mg/kg	ACS-SD-06-01	3/3	NA	5.9E+001					NO	NTX
7440622	Vanadium	2.7E+001	J	3.5E+001	J	mg/kg	ACS-SD-13-01	3/3	NA	3.5E+001		5.5E+002			YES	FD
7440666	Zinc	1.7E+002		2.7E+002		mg/kg	ACS-SD-14-01	3/3	NA	2.7E+002		2.3E+004			YES	FD

* Chemicals not detected in all samples are not included in this table.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Value (ARV)
Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-7-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 1
Exposure Medium:	Surface Water
Exposure Point:	Fire Pond, Puddle

File: SWA1SS.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3,4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (5)
67641	Acetone	5.0E-003		5.0E-003		mg/L	SW02-01	1/2	5.0E-003	5.0E-003		3.7E+000			YES	FD
7429905	Aluminum	9.6E-001		9.6E-001		mg/L	SW02-01	1/2	9.6E-001	9.6E-001		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	3.3E-001		3.3E-001		mg/L	SW01-01	1/2	3.3E-001	3.3E-001		2.1E-001			YES	FD, ARV
12672296	Aroclor-1248	5.0E-004		8.4E-004		mg/L	SW02-01	2/2	0.0005-0.00084	8.4E-004		3.3E-005			YES	FD, ARV
7440439	Cadmium	7.2E-004		7.2E-004		mg/L	SW02-01	1/2	7.2E-004	7.2E-004		1.8E-002	5.0E-003	MCL	YES	FD
7440702	Calcium	1.3E+001		7.8E+001		mg/L	SW01-01	2/2	12.5-78.3	7.8E+001		NA			NO	NTX
16887006	Chloride	1.0E+000		4.0E+001		mg/L	SW01-01	2/2	1-40	4.0E+001		NA	2.5E+002	SMCL	NO	NTX
18540299	Chromium (total)	7.8E-003	J	8.3E-002	J	mg/L	SW02-01	2/2	0.0078-0.083	8.3E-002		1.1E-001	1.0E-001	MCL	YES	FD
7440508	Copper	2.2E-002		2.2E-002		mg/L	SW02-01	1/2	2.2E-002	2.2E-002		1.5E+000	1.3E+000	MCL	YES	FD
75343	Dichloroethane, 1,1-	2.0E-003	J	2.0E-003	J	mg/L	SW01-01	1/2	2.0E-003	2.0E-003		8.0E-001			YES	FD
540590	Dichloroethene, 1,2-	1.0E-003		1.0E-003		mg/L	SW01-01	1/2	0.001-0.001	1.0E-003		5.5E-002			YES	FD
	Total Dissolved Solids	2.8E+001		5.1E+002		mg/L	SW01-01	2/2	28-510	5.1E+002		NA			NO	NTX
7439896	Iron	2.7E-001		8.5E-001		mg/L	SW02-01	2/2	0.265-0.851	8.5E-001		1.1E+001	3.0E-001	SMCL	YES	FD
7439921	Lead	6.3E-003	J	2.4E-002	J	mg/L	SW02-01	2/2	0.0063-0.0238	2.4E-002		1.5E-002	1.5E-002	MCL	YES	FD, ARV
7439954	Magnesium	1.1E+000		3.5E+001		mg/L	SW01-01	2/2	1.06-34.8	3.5E+001		NA			NO	NTX
7439965	Manganese	2.4E-002		5.8E-002		mg/L	SW01-01	2/2	0.024-0.058	5.8E-002		7.3E-001	5.0E-002	SMCL	YES	FD
78933	2-Butanone	3.3E-002		3.3E-002		mg/L	SW02-01	1/2	3.3E-002	3.3E-002		1.9E+000			YES	FD
14797650	Nitrate/Nitrite	9.0E-002		2.5E-001		mg/L	SW02-01	2/2	0.09-0.25	2.5E-001		3.7E+000	1.0E+000	MCL	YES	FD
	Organic Carbon (total)	2.1E+000		2.8E+000		mg/L	SW01-01	2/2	2.1-2.8	2.8E+000		NA			NO	NTX
7440097	Potassium	6.5E-001		6.1E+000		mg/L	SW01-01	2/2	0.65-6.14	6.1E+000		NA			NO	NTX
7440235	Sodium	8.2E+001		8.2E+001		mg/L	SW01-01	1/2	8.2E+001	8.2E+001		NA			NO	NTX
RR005185	Sulfate	1.0E+001		8.7E+001		mg/L	SW01-01	2/2	10-87	8.7E+001		NA	5.0E+002	MCL	NO	NTX
	Suspended solids (total)	8.0E+000	J	2.0E+001	J	mg/L	SW02-01	2/2	8-20	2.0E+001		NA			NO	NTX
7440666	Zinc	5.4E-002		6.1E-002		mg/L	SW02-01	2/2	0.054-0.061	6.1E-002		1.1E+001	5.0E+000	SMCL	YES	FD

Notes:

* Chemicals not detected in all samples are not included in this table.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. No chemicals are screened against the reference toxicity values.

(4) The Federal MCL was used as the Reference Toxicity Value for Lead.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-7-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Future
Medium:	Surface Water Area 2
Exposure Medium:	Surface Water
Exposure Point:	Ditch

File: SWA2SS.wb4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3,4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (5)
75343	1,1-Dichloroethane	1.0E-003	J	1.0E-003	J	mg/L	ACS-SW05-01	1/1	NA	1.0E-003		8.0E-001			YES	FD
540590	1,2-Dichloroethene (total)	3.0E-003		3.0E-003		mg/L	ACS-SW05-01	1/1	NA	3.0E-003		5.5E-002			YES	FD
105679	2,4-Dimethylphenol	1.2E-002		1.2E-002		mg/L	ACS-SW05-01	1/1	NA	1.2E-002		7.3E-001			YES	FD
78933	2-Butanone	1.4E-001		1.4E-001		mg/L	ACS-SW05-01	1/1	NA	1.4E-001		1.9E+000			YES	FD
95487	2-Methylphenol	5.0E-003		5.0E-003		mg/L	ACS-SW05-01	1/1	NA	5.0E-003		1.8E+000			YES	FD
59507	4-Chloro-3-methylphenol	2.0E-003		2.0E-003		mg/L	ACS-SW05-01	1/1	NA	2.0E-003		NA			NO	NTX
108101	4-Methyl-2-pentanone	4.9E-002		4.9E-002		mg/L	ACS-SW05-01	1/1	NA	4.9E-002		2.9E+000			YES	FD
106445	4-Methylphenol	9.0E-003		9.0E-003		mg/L	ACS-SW05-01	1/1	NA	9.0E-003		1.8E-001			YES	FD
67641	Acetone	3.8E-001		3.8E-001		mg/L	ACS-SW05-01	1/1	NA	3.8E-001		3.7E+000			YES	FD
	Alkalinity	7.6E+002		7.6E+002		mg/L	ACS-SW05-01	1/1	NA	7.6E+002		NA			NO	NTX
7429905	Aluminum	4.7E-001		4.7E-001		mg/L	ACS-SW05-01	1/1	NA	4.7E-001		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	1.8E+001		1.8E+001		mg/L	ACS-SW05-01	1/1	NA	1.8E+001		2.1E-001			YES	FD, ARV
7440382	Arsenic	4.5E-002		4.5E-002		mg/L	ACS-SW05-01	1/1	NA	4.5E-002		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	3.3E-001		3.3E-001		mg/L	ACS-SW05-01	1/1	NA	3.3E-001		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	4.6E-001		4.6E-001		mg/L	ACS-SW05-01	1/1	NA	4.6E-001		3.6E-004	5.0E-003	MCL	YES	FD, ARV
7440417	Beryllium	2.8E-004		2.8E-004		mg/L	ACS-SW05-01	1/1	NA	2.8E-004		7.3E-002	4.0E-003	MCL	YES	FD
111444	bis(2-Chloroethyl) ether	7.7E-002		7.7E-002		mg/L	ACS-SW05-01	1/1	NA	7.7E-002		6.1E-006			YES	FD, ARV
7440702	Calcium	3.3E+002		3.3E+002		mg/L	ACS-SW05-01	1/1	NA	3.3E+002		NA			NO	NTX
	Chemical Oxygen Demand	1.8E+002		1.8E+002		mg/L	ACS-SW05-01	1/1	NA	1.8E+002		NA			NO	NTX
16887006	Chloride	1.5E+002		1.5E+002		mg/L	ACS-SW05-01	1/1	NA	1.5E+002		NA	2.5E+002	SMCL	NO	NTX
75003	Chloroethane	3.0E-002		3.0E-002		mg/L	ACS-SW05-01	1/1	NA	3.0E-002		3.6E-003			YES	FD, ARV
16540299	Chromium (total)	2.8E-002	J	2.8E-002	J	mg/L	ACS-SW05-01	1/1	NA	2.8E-002		1.8E-001			YES	FD
	Dissolved solids (total)	1.2E+003		1.2E+003		mg/L	ACS-SW05-01	1/1	NA	1.2E+003		NA			NO	NTX
100414	Ethyl Benzene	6.0E-003		6.0E-003		mg/L	ACS-SW05-01	1/1	NA	6.0E-003		1.3E+000			YES	FD
7439896	Iron	1.4E+001		1.4E+001		mg/L	ACS-SW05-01	1/1	NA	1.4E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
78591	Isophorone	5.0E-003		5.0E-003		mg/L	ACS-SW05-01	1/1	NA	5.0E-003		7.0E-002			YES	FD
7439921	Lead	4.2E-003	J	4.2E-003	J	mg/L	ACS-SW05-01	1/1	NA	4.2E-003		1.5E-002	1.5E-002	MCL	YES	FD
7439954	Magnesium	6.2E+001		6.2E+001		mg/L	ACS-SW05-01	1/1	NA	6.2E+001		NA			NO	NTX
7439965	Manganese	9.9E-001		9.9E-001		mg/L	ACS-SW05-01	1/1	NA	9.9E-001		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
7440020	Nickel	8.0E-002		8.0E-002		mg/L	ACS-SW05-01	1/1	NA	8.0E-002		7.3E-001	1.0E-001	MCL	YES	FD
14797650	Nitrate/Nitrite	1.2E-001		1.2E-001		mg/L	ACS-SW05-01	1/1	NA	1.2E-001		3.7E+000			YES	FD
	Organic Carbon (total)	5.3E+001		5.3E+001		mg/L	ACS-SW05-01	1/1	NA	5.3E+001		NA			NO	NTX
108952	Phenol	2.3E-002		2.3E-002		mg/L	ACS-SW05-01	1/1	NA	2.3E-002		2.2E+001			YES	FD
7440097	Potassium	3.0E+001		3.0E+001		mg/L	ACS-SW05-01	1/1	NA	3.0E+001		NA			NO	NTX
7440235	Sodium	7.7E+001		7.7E+001		mg/L	ACS-SW05-01	1/1	NA	7.7E+001		NA			NO	NTX
RR005165	Sulfate	7.9E+001		7.9E+001		mg/L	ACS-SW05-01	1/1	NA	7.9E+001		NA	5.0E+002	MCL	NO	NTX
	Suspended solids (total)	6.6E+001	J	6.6E+001	J	mg/L	ACS-SW05-01	1/1	NA	6.6E+001		NA			NO	NTX
108883	Toluene	7.0E-003		7.0E-003		mg/L	ACS-SW05-01	1/1	NA	7.0E-003		7.5E-001	1.0E+000	MCL	YES	FD

TABLE 2-7-2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Future
Medium:	Surface Water Area 2
Exposure Medium:	Surface Water
Exposure Point:	Ditch

File: SWA2SS.wb4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3,4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (5)
1330207	Xylenes (total)	3.5E-002		3.5E-002		mg/L	ACS-SW05-01	1/1	NA	3.5E-002		1.2E+001			YES	FD
7440666	Zinc	5.3E-002		5.3E-002		mg/L	ACS-SW05-01	1/1	NA	5.3E-002		1.1E+001	5.0E+000	SMCL	YES	FD

Notes:

* Chemicals not detected in all samples are not included in this table.

(1) Minimum/maximum detected concentration.

(2) *No background samples collected.*

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. No chemicals are screened against the reference toxicity values.

(4) The Federal MCL was used as the Reference Toxicity Value for Lead.

(5) Rationale Codes Selection Reason: *Infrequent Detection but Associated Historically (HIST)*
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = *Estimated Value*
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-7-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 4A
Exposure Medium:	Surface Water
Exposure Point:	Wetlands

File: SWA4A66a.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3, 4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (5)
108601	2,2'-oxybis(1-Chloropropane)	5.0E-003	J	2.9E-002		mg/L	ACS-SW07A-01	7/13	0.005-0.010	2.9E-002		2.6E-004			YES	FD, ARV
78933	2-Butanone	7.0E-004		7.0E-004		mg/L	97ZB02S05	1/13	0.010-0.100	7.0E-004		1.9E+000			YES	FD
106445	4-Methylphenol	1.0E-003	J	1.0E-003	J	mg/L	APD-SW18-01	1/13	0.005-0.010	1.0E-003		1.8E-001			YES	FD
67641	Acetone	7.0E-003	J	1.3E-002		mg/L	APD-SW16-01	5/13	0.005-0.100	1.3E-002		3.7E+000			YES	FD
	Alkalinity	2.7E+002		2.7E+002		mg/L	ACS-SW07A-01	1/1	NA	2.7E+002		NA			NO	NTX
7429905	Aluminum	3.2E-001		3.2E-001		mg/L	97ZB02S05	1/2	0.200-0.200	3.2E-001		3.7E+001	2.0E+002	SMCL	YES	FD
7664417	Ammonia	4.8E-001		4.8E-001		mg/L	ACS-SW07A-01	1/1	NA	4.8E-001		2.1E-001			YES	FD, ARV
7440382	Arsenic	2.3E-003	J	2.3E-003	J	mg/L	ACS-SW07A-01	1/2	0.004-0.004	2.3E-003		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	1.2E-001		1.2E-001		mg/L	97ZB02S05	1/2	0.200-0.200	1.2E-001		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	5.4E-002		1.8E+000		mg/L	APD-SW09-01	3/13	0.001-0.010	1.8E+000		3.6E-004	5.0E-003	MCL	YES	FD, ARV
111444	bis(2-Chloroethyl) ether	2.0E-003	J	8.0E-003	J	mg/L	APD-SW09-01	7/13	0.010-0.010	8.0E-003		6.1E-005			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	3.0E-003	J	8.0E-003	J	mg/L	APD-SW13-01	5/13	0.005-0.010	8.0E-003		4.8E-003			YES	FD, ARV
7440439	Cadmium	6.0E-003		3.2E-002		mg/L	APD-SW09-01	3/13	0.000-0.005	3.2E-002		1.8E-002	5.0E-003	MCL	YES	FD, ARV
7440702	Calcium	1.3E+002		1.3E+002		mg/L	ACS-SW07A-01	2/2	NA	1.3E+002		NA			NO	NTX
16887006	Chloride	5.1E+001		5.1E+001		mg/L	ACS-SW07A-01	1/1	NA	5.1E+001		NA	2.5E+002	SMCL	NO	NTX
75003	Chloroethane	2.0E-003		4.4E-001		mg/L	APD-SW09-01	6/13	0.010-0.010	4.4E-001		3.6E-003			YES	FD, ARV
57125	Cyanide (total)	5.6E-003		5.6E-003		mg/L	APD-SW09-01	1/13	0.005-0.010	5.6E-003		7.3E-001	2.0E-001	MCL	YES	FD
	Dissolved solids (total)	5.3E+002		5.3E+002		mg/L	ACS-SW07A-01	1/1	NA	5.3E+002		NA			NO	NTX
7439896	Iron	1.1E+000		2.2E+002		mg/L	APD-SW09-01	13/13	NA	2.2E+002		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
78591	Isophorone	2.0E-003	J	2.0E-003	J	mg/L	APD-SW09-01	1/13	0.005-0.010	2.0E-003		7.0E-002			YES	FD
7439921	Lead	4.6E-003	J	1.8E-001		mg/L	APD-SW18-01	4/13	0.002-0.009	1.8E-001		1.5E-002	1.5E-002	MCL	YES	FD, ARV
7439954	Magnesium	3.6E+001		3.6E+001		mg/L	97ZB02S05	1/2	25.100-25.100	3.6E+001		NA			NO	NTX
7439965	Manganese	4.3E-001		9.4E-001		mg/L	ACS-SW07A-01	2/2	NA	9.4E-001		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
7439976	Mercury	2.8E-004		2.8E-004		mg/L	APD-SW18-01	1/13	0.0001-0.0002	2.8E-004		NA	2.0E-003	MCL	NO	NTX
14797650	Nitrate/Nitrite	5.0E-002		5.0E-002		mg/L	ACS-SW07A-01	1/1	NA	5.0E-002		3.7E+000	1.0E+000	MCL	YES	FD

TABLE 2-7-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 4A
Exposure Medium:	Surface Water
Exposure Point:	Wetlands

File: SWA4A66q.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3, 4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (5)
	Organic Carbon (total)	1.3E+001		1.3E+001		mg/L	ACS-SW07A-01	1/1	NA	1.3E+001		NA			NO	NTX
7440097	Potassium	2.1E+001		2.1E+001		mg/L	97ZB02S05	1/2	3.570-3.570	2.1E+001		NA			NO	NTX
7440235	Sodium	3.6E+001		3.6E+001		mg/L	97ZB02S05	1/2	29.500-29.500	3.6E+001		NA			NO	NTX
RR005185	Sulfate	6.2E+001		6.2E+001		mg/L	ACS-SW07A-01	1/1	NA	6.2E+001		NA	5.0E+002	MCL	NO	NTX
	Suspended solids (total)	6.8E+001	J	6.8E+001	J	mg/L	ACS-SW07A-01	1/1	NA	6.8E+001		NA			NO	NTX
7440666	Zinc	3.7E-001	J	4.6E-001		mg/L	APD-SW09-01	3/13	0.020-0.179	4.6E-001		1.1E+001	5.0E+000	SMCL	YES	FD

Notes:

* Chemicals not detected in all samples are not included in this table.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. No chemicals are screened against the reference toxicity values.

(4) The Federal MCL was used as the Reference Toxicity Value for lead.

(5) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
D = Sample Diluted Out

TABLE 2-7-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 4B
Exposure Medium:	Surface Water
Exposure Point:	Drainage Ditch

File: SWA4B08.wk4

CAS Number	Chemical*	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
71556	1,1,1-Trichloroethane	1.6E-001	D	1.6E-001	D	mg/L	97ZB04S21	1/1	NA	1.6E-001		5.4E-001	2.0E-001	MCL	YES	FD
79345	1,1,2,2-Tetrachloroethane	1.0E-003		1.0E-003		mg/L	97ZB04S21	1/1	NA	1.0E-003		5.3E-005			YES	FD, ARV
79005	1,1,2-Trichloroethane	3.0E-003		3.0E-003		mg/L	97ZB04S21	1/1	NA	3.0E-003		1.9E-004	5.0E-003	MCL	YES	FD, ARV
75343	1,1-Dichloroethane	2.4E-001		2.4E-001		mg/L	97ZB04S21	1/1	NA	2.4E-001		8.0E-001			YES	FD
95636	1,2,4-Trimethylbenzene	3.2E-002	D	3.2E-002	D	mg/L	97ZB04S21	1/1	NA	3.2E-002		1.2E-002			YES	FD, ARV
95501	1,2-Dichlorobenzene	7.0E-003		7.0E-003		mg/L	97ZB04S21	1/1	NA	7.0E-003		6.4E-002	6.0E-001	MCL	YES	FD
107062	1,2-Dichloroethane	6.0E-003		6.0E-003		mg/L	97ZB04S21	1/1	NA	6.0E-003		1.2E-004	5.0E-003	MCL	YES	FD, ARV
108678	1,3,5-Trimethylbenzene	1.1E-002		1.1E-002		mg/L	97ZB04S21	1/1	NA	1.1E-002		1.2E-002			YES	FD
541731	1,3-Dichlorobenzene	1.0E-003	J	1.0E-003	J	mg/L	97ZB04S21	1/1	NA	1.0E-003		1.4E-002			YES	FD
106467	1,4-Dichlorobenzene	1.0E-003		1.0E-003		mg/L	97ZB04S21	1/1	NA	1.0E-003		4.7E-004	7.5E-002	MCL	YES	FD, ARV
71432	Benzene	1.1E-001	D	1.1E-001	D	mg/L	97ZB04S21	1/1	NA	1.1E-001		3.6E-004	5.0E-003	MCL	YES	FD, ARV
108907	Chlorobenzene	1.0E-003	J	1.0E-003	J	mg/L	97ZB04S21	1/1	NA	1.0E-003		3.5E-002			YES	FD
75003	Chloroethane	2.7E-002	D	2.7E-002	D	mg/L	97ZB04S21	1/1	NA	2.7E-002		3.6E-003			YES	FD, ARV
67663	Chloroform	7.0E-003		7.0E-003		mg/L	97ZB04S21	1/1	NA	7.0E-003		1.5E-004	1.0E-001	MCL	YES	FD, ARV
156592	cis-1,2-Dichloroethene	1.9E-001		1.9E-001		mg/L	97ZB04S21	1/1	NA	1.9E-001		6.1E-002	7.0E-002	MCL	YES	FD, ARV
100414	Ethyl Benzene	5.0E-003		5.0E-003		mg/L	97ZB04S21	1/1	NA	5.0E-003		1.3E+000	7.0E-001		YES	FD
108383	m,p-xylene	1.6E-002		1.6E-002		mg/L	97ZB04S21	1/1	NA	1.6E-002		1.2E+001			YES	FD
91203	Naphthalene	8.0E-003		8.0E-003		mg/L	97ZB04S21	1/1	NA	8.0E-003		7.3E-001			YES	FD
95476	ortho-xylene	2.9E-002	D	2.9E-002	D	mg/L	97ZB04S21	1/1	NA	2.9E-002		1.2E+001			YES	FD
99876	p-Cymene	1.0E-003	J	1.0E-003	J	mg/L	97ZB04S21	1/1	NA	1.0E-003		NA			NO	NTX
127184	Tetrachloroethene	1.0E-003		1.0E-003		mg/L	97ZB04S21	1/1	NA	1.0E-003		1.1E-003	5.0E-003	MCL	YES	FD
108883	Toluene	4.5E-002	D	4.5E-002	D	mg/L	97ZB04S21	1/1	NA	4.5E-002		7.5E-001	1.0E+000	MCL	YES	FD
156605	trans-1,2-Dichloroethene	3.0E-003		3.0E-003		mg/L	97ZB04S21	1/1	NA	3.0E-003		1.2E-001	1.0E-001	MCL	YES	FD
79016	Trichloroethene	3.0E-003		3.0E-003		mg/L	97ZB04S21	1/1	NA	3.0E-003		1.6E-003	5.0E-003	MCL	YES	FD, ARV
75014	Vinyl Chloride	1.4E-001	D	1.4E-001	D	mg/L	97ZB04S21	1/1	NA	1.4E-001		1.9E-005	2.0E-003	MCL	YES	FD, ARV

Notes:

* Chemicals not detected in all samples are not included in this table.

(1) Minimum/maximum detected concentration.

(2) No background samples collected.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. No chemicals are screened against the reference toxicity value

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
D = Diluted Out

TABLE 2-8-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Site-Wide
Exposure Point:	Lower Aquifer

File: LGWOVRss.wk4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
75343	1,1-Dichloroethane	0.006		0.006		mg/L	IW1-1997-AVG	1/148	0.006	6.0E-003		8.0E-001			NO	IFD
108601	2,2'-oxybis(1-Chloropropane)	0.0065	J	0.0065	J	mg/L	MW51-01-1996-AVG	1/133	0.0065	6.5E-003		2.6E-004			NO	IFD
78933	2-Butanone	0.0055		0.0055		mg/L	MW07-01-1996-AVG	1/128	0.0055	5.5E-003		1.9E+003			NO	IFD
95487	2-Methiphenol	0.002	J	0.002	J	mg/L	MW55-01-1997	1/134	0.002	2.0E-003		1.8E+003			NO	IFD
72548	4,4'-DDD	0.000002		0.000002		mg/L	IW6-1997	1/117	0.000002	2.0E-006		2.8E-004			NO	IFD
	4-Chloro-3-methylphenol	0.004	J	0.004	J	mg/L	MW55-01-1997	1/134	0.004	4.0E-003					NO	IFD, NTX
108101	4-Methyl-2-pentanone	0.002		0.009		mg/L	MW10-01-1996	8/147	0.002-0.009	9.0E-003		2.9E+000			YES	FD
106445	4-Methylphenol	0.0105		0.0105		mg/L	MW53-01-1997-AVG	1/134	0.0105	1.1E-002		1.8E+002			NO	IFD
100027	4-Nitrophenol	0.019	J	0.019	J	mg/L	MW55-01-1997	1/133	0.019	1.9E-002		2.9E+002			NO	IFD
67641	Acetone	0.005	J	0.022		mg/L	MW52-01-1996	10/130	0.005-0.022	2.2E-002		3.7E+000			YES	FD
309002	Aldrin	0.000006		0.000006		mg/L	IW6-1997	1/117	0.000006	6.0E-006		3.9E-006			NO	IFD
	Alkalinity	170		434		mg/L	MW09-01-1990	8/8	170-434	4.3E+002					NO	NTX
319846	alpha-BHC	0.00003		0.00003		mg/L	MW33-01-1997	1/117	0.00003	3.0E-005		1.1E-005			NO	IFD
7429905	Aluminum	0.0609		15		mg/L	MW53-02-1997	78/126	0.0609-15	1.5E+001		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	0.26		3.68		mg/L	MW09-01-1990	5/8	0.26-3.68	3.7E+000		2.1E-001			YES	FD, ARV
120127	Anthracene	0.0007		0.0009		mg/L	MW30-1996	2/133	0.0007-0.0009	9.0E-004		1.1E+004			NO	IFD
7440360	Antimony	0.0013		0.0063		mg/L	MW52-01-1996	9/126	0.0013-0.0063	6.3E-003		1.5E-002	6.0E-003	MCL	YES	FD
12672296	Aroclor-1248	0.00019		0.00019		mg/L	IW6-1997	1/134	0.00019	1.9E-004		3.3E-005			NO	IFD
7440382	Arsenic	0.00115		0.125		mg/L	MW52-01-1997	63/134	0.00115-0.125	1.3E-001		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.0267		1.62		mg/L	MW53-02-1997	122/126	0.0267-1.62	1.6E+000		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	0.00065		0.31		mg/L	MW09-01-1996	12/148	0.00065-0.31	3.1E-001		3.6E-004	5.0E-003	MCL	YES	FD, ARV
207089	Benzo(k)fluoranthene	0.001		0.001		mg/L	MW-09-1997-EPA	2/133	0.001	1.0E-003		9.2E-004			NO	IFD
65850	Benzoic Acid	0.006		0.006		mg/L	MW28-01-1997-EPA	1/15	0.006	6.0E-003		1.5E+002			YES	FD
7440417	Beryllium	0.001		0.0019		mg/L	MW53-02-1997	13/134	0.001-0.0019	1.9E-003		7.3E-002	4.0E-003	MCL	YES	FD
111444	bis(2-Chloroethyl) ether	0.002		0.044		mg/L	MW09-01-1996	10/134	0.002-0.044	4.4E-002		6.1E-006			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	0.002		0.093		mg/L	MW23-01-1997-EPA	42/132	0.002-0.093	9.3E-002		4.8E-003	6.0E-003	MCL	YES	FD, ARV
75274	Bromodichloromethane	0.0006		0.0006		mg/L	IW4-1997-AVG	1/148	0.0006	6.0E-004		1.7E-004			NO	IFD
7440439	Cadmium	0.0003		0.0358		mg/L	IW6-1997	9/126	0.0003-0.0358	3.6E-002		1.8E-002	5.0E-003	MCL	YES	FD, ARV
7440702	Calcium	0.962		313		mg/L	MW33-01-1997	126/126	0.962-313	3.1E+002					NO	NTX
75150	Carbon Disulfide	0.0001		0.0004		mg/L	MW22-04-1997	5/148	0.0001-0.0004	4.0E-004		1.0E+000			NO	IFD
	Chemical Oxygen Demand	39		154		mg/L	MW10-01-1990	4/8	39-154	1.5E+002					NO	NTX
16887006	Chloride	11		191		mg/L	MW10-01-1990	8/8	11-191	1.9E+002			2.5E+002	SMCL	NO	NTX
75003	Chloroethane	0.0001	J	2.9		mg/L	MW09-01-1997	18/148	0.0001-2.9	2.9E+000		3.6E-003			YES	FD, ARV
67663	Chloroform	0.0006		0.003		mg/L	MW22-02-1997	5/148	0.0006-0.003	3.0E-003		1.5E-004	1.0E-001	MCL	NO	IFD

TABLE 2-8-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Site-Wide
Exposure Point:	Lower Aquifer

File: LGWOVRes.wk4

CAS Number	Chemical	Minimum (1) Detected Concentration	Minimum Qualifier	Maximum (1) Detected Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
74873	Chloromethane	0.0001	J	0.001		mg/L	MW-09-1997-EPA	4/148	0.0001-0.001	1.0E-003		1.5E-003			NO	IFD
18540299	Chromium (total)	0.0013		0.36		mg/L	MW10C-03-1997	91/126	0.0013-0.36	3.6E-001		1.1E-001			YES	FD, ARV
156592	cis-1,2-Dichloroethene	0.0001		0.0386		mg/L	IW1-1997-AVG	3/29	0.0001-0.0386	3.9E-002		6.1E-002			YES	FD
7440484	Cobalt	0.001		0.014		mg/L	MW24-02-1997	90/126	0.001-0.014	1.4E-002		2.2E+000			YES	FD
7440508	Copper	0.0015		0.125		mg/L	MW22-03-1997	83/126	0.0015-0.125	1.3E-001		1.5E+000	1.3E+000	MCL	YES	FD
57125	Cyanide (total)	0.01005		0.01005		mg/L	MW08-04-1997-AVG	1/117	0.01005	1.0E-002		7.3E+002			NO	IFD
84742	Di-n-butylphthalate	0.0007	J	0.001		mg/L	MW28-01-1997-EPA	4/133	0.0007-0.001	1.0E-003		3.7E+003			NO	IFD
117840	Di-n-octylphthalate	0.001		0.01		mg/L	MW21-01-1996-AVG	2/133	0.001-0.01	1.0E-002		7.3E-001			NO	IFD
84662	Diethylphthalate	0.002		0.0029		mg/L	IW4-1997-AVG	2/133	0.002-0.0029	2.9E-003		2.9E+001			NO	IFD
131113	Dimethylphthalate	0.009		0.009		mg/L	MW50-01-1997-AVG	1/133	0.009	9.0E-003		3.7E+005			NO	IFD
	Dissolved solids (total)	252		824		mg/L	MW10-01-1990	8/8	252-824	8.2E+002			5.0E+002	SMCL	NO	NTX
	Endrin aldehyde	0.000011	J	0.000011	J	mg/L	MW53-04-1997	1/108	0.000011	1.1E-005					NO	IFD, NTX
100414	Ethyl Benzene	0.0001		0.0015		mg/L	IW1-1997-AVG	6/147	0.0001-0.0015	1.5E-003		1.3E+000			NO	IFD
76448	Heptachlor	0.000006	J	0.000006	J	mg/L	MW32-04-1997	1/117	0.000006	6.0E-006		2.3E-003	4.0E-004	MCL	NO	IFD
7439896	Iron	0.008		51.5		mg/L	MW24-02-1997	122/126	0.008-51.5	5.2E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
78591	Isophorone	0.0006		0.005		mg/L	MW53-03-1997	13/134	0.0006-0.005	5.0E-003		7.0E-002			YES	FD
7439921	Lead	0.001		0.304		mg/L	IW6-1997	82/126	0.001-0.304	3.0E-001			1.5E-002	MCL	YES	FD
7439954	Magnesium	4.3		117		mg/L	MW53-02-1997	126/126	4.3-117	1.2E+002					NO	NTX
7439965	Manganese	0.0103		1.67		mg/L	MW24-01-1995	134/134	0.0103-1.67	1.7E+000		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
7439976	Mercury	0.00047		0.00067	J	mg/L	MW09-01-1997	2/126	0.00047-0.00067	6.7E-004			2.0E-003	MCL	YES	FD
75092	Methylene Chloride	0.001	J	0.1275		mg/L	MW10C-02-1997-AVG	2/148	0.001-0.1275	1.3E-001		4.1E+000			NO	IFD
	N-Nitroso-di-n-propylamine	0.0065		0.0065		mg/L	MW51-01-1996-AVG	1/134	0.0065	6.5E-003					NO	IFD, NTX
7440020	Nickel	0.0025		0.257		mg/L	MW10C-03-1997	84/126	0.003-0.257	2.6E-001		7.3E-001	1.0E-001	MCL	YES	FD
14797650	Nitrate/Nitrite	0.77	J	1.05	J	mg/L	MW09-01-1990	4/8	0.77-1.05	1.1E+000		3.7E+000	1.0E+000	MCL	YES	FD
	Organic Carbon (total)	2.5		15.2		mg/L	MW09-01-1990	8/8	2.5-15.2	1.5E+001					NO	NTX
108952	Phenol	0.001		0.34		mg/L	MW34-03-1997	82/133	0.001-0.34	3.4E-001		2.2E+001			YES	FD
7440097	Potassium	0.89		93.1		mg/L	MW22-01-1996	114/126	0.89-93.1	9.3E+001					NO	NTX
7782492	Selenium	0.0021		0.0032		mg/L	MW24-04-1997	7/126	0.0021-0.0032	3.2E-003		1.8E+002	5.0E-002	MCL	YES	FD
7440235	Sodium	10		404		mg/L	MW53-02-1997	126/126	10-404	4.0E+002					NO	NTX
RR005185	Sulfate	19		64		mg/L	MW08-01-1990	8/8	19-64	6.4E+001			5.0E+002	MCL	NO	NTX
	Suspended solids (total)	121		991		mg/L	MW10-01-1990	8/8	121-991	9.9E+002					NO	NTX
127184	Tetrachloroethene	0.00035		0.0085		mg/L	IW1-1997-AVG	2/147	0.00035-0.0085	8.5E-003		1.1E-003	5.0E-003	MCL	NO	IFD
7440280	Thallium	0.0018	J	0.004		mg/L	MW24-01-1997	4/134	0.0018-0.004	4.0E-003		2.6E-003			NO	IFD
108883	Toluene	0.0001		0.003		mg/L	IW1-1997-AVG	15/147	0.0001-0.003	3.0E-003		7.5E-001	1.0E+000	MCL	YES	FD

TABLE 2-8-1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Site-Wide
Exposure Point:	Lower Aquifer

File: LGWOVRSS.wk4

CAS Number	Chemical	Minimum (1) Detected Concentration	Minimum Qualifier	Maximum (1) Detected concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
156605	trans-1,2-Dichloroethene	0.00045		0.002		mg/L	M04D-01-1997-EPA	3/29	0.00045-0.002	2.0E-003		1.2E-001	1.0E-001	MCL	YES	FD
79016	Trichloroethene	0.0002		0.0055		mg/L	IW1-1997-AVG	4/148	0.0002-0.0055	5.5E-003		1.6E-003	5.0E-003	MCL	NO	IFD
7440622	Vanadium	0.001		0.0304		mg/L	MW24-02-1997	65/126	0.001-0.0304	3.0E-002		2.6E-001			YES	FD
75014	Vinyl Chloride	0.001		0.1285		mg/L	MW10C-02-1997-AVG	3/148	0.001-0.1285	1.3E-001		1.9E-005	2.0E-003	MCL	NO	IFD
1330207	Xylenes (total)	0.00015	J	0.006		mg/L	IW1-1997-AVG	8/147	0.00015-0.006	6.0E-003		1.2E+001	1.0E+001	MCL	YES	FD
7440666	Zinc	0.01		33.3		mg/L	IW6-1997	37/126	0.01-33.3	3.3E+001		1.1E+001	5.0E+000	SMCL	YES	FD, ARV

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

h N/A - Refer to supporting information for background discussion.

Background values derived from statistical analysis. Follow Regional guidance and provide supporting information.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)

Frequent Detection (FD)

Toxicity Information Available (TX)

Above Reference Toxicity Value (ARV)

Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)

Background Levels (BKG)

No Toxicity Information (NTX)

Definitions:

NA = Not Applicable and/or Available

SQL = Sample Quantitation Limit

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered

MCL = Federal Maximum Contaminant Level

SMCL = Secondary Maximum Contaminant Level

J = Estimated Value

C = Carcinogenic

N = Non-Carcinogenic

TABLE 2-8-8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Groundwater
Exposure Medium:	Area 5A Private Wells
Exposure Point:	Lower Aquifer

File: LOWPRV98.wk4

CAS Number	Chemical	Minimum (1) Detected Concentration	Minimum Qualifier	Maximum (1) Detected Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
107062	1,2-Dichloroethane	0.0001		0.0001		mg/L	PWJ-01-1997	1/36	0.001-0.002	1.0E-004		1.2E-004	5.0E-003	MCL	NO	IFD
106467	1,4-Dichlorobenzene	0.0003		0.0003		mg/L	PWN-01-1997	1/34	0.001-0.005	3.0E-004		4.7E-004	7.5E-002	MCL	NO	IFD
78933	2-Butanone	0.003		0.004		mg/L	PWRE-01-1997-AVG	2/22	0.003-0.005	4.0E-003		1.9E+000			YES	FD
	Alkalinity	284		396		mg/L	PW03-01-1990	6/6	NA	4.0E+002					NO	NTX
7429905	Aluminum	0.108	J	0.108	J	mg/L	PWK-02-1997	1/34	0.01-0.2	1.0E-001		3.7E+001	2.0E-001	SMCL	NO	IFD
7440360	Antimony	0.0014		0.0017		mg/L	PWX-01-1997	2/34	0.001-0.005	1.7E-003		1.5E-002	6.0E-003	MCL	YES	FD
7440382	Arsenic	0.0028		0.0038		mg/L	PWS-01-1997	2/34	0.002	3.8E-003		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.0027		0.29		mg/L	PW04-01-1990	34/34	NA	2.9E-001		2.6E+000	2.0E+000	MCL	YES	FD
117817	bis(2-Ethylhexyl)phthalate	0.001		0.001		mg/L	PWA-01-1997-EPA	4/34	0.001-0.006	1.0E-003		4.8E-003	6.0E-003	MCL	YES	FD
7440439	Cadmium	0.0004		0.0011		mg/L	PWD-01-1997	2/34	0.0002-0.001	1.1E-003		1.8E-002	5.0E-003	MCL	YES	FD
7440702	Calcium	1.47		120		mg/L	PWT-01-1997	34/34	NA	1.2E+002					NO	NTX
16887006	Chloride	4		65		mg/L	PW06-01-1990	6/6	NA	6.5E+001			2.5E+002	SMCL	NO	NTX
67663	Chloroform	0.001		0.001		mg/L	PWC-01-1997-EPA	2/36	0.001-0.002	1.0E-003		1.5E-004	1.0E-001	MCL	YES	FD, ARV
74873	Chloromethane	0.0003		0.0003		mg/L	PWL-01-1997	1/30	0.001-0.002	3.0E-004		1.5E-003		SMCL	NO	IFD
18540299	Chromium (total)	0.00067		0.00067		mg/L	PW04-01-1990	1/34	0.0002-0.01	6.7E-004		1.1E-001			NO	IFD
7440508	Copper	0.001		0.155		mg/L	PWD-01-1997	18/34	0.001-0.02	1.6E-001		1.5E+000	1.3E+000	MCL	YES	FD
7439896	Iron	0.0536		4.51		mg/L	PW02-01-1990	33/34	0.0396	4.5E+000		1.1E+001	3.0E-001	SMCL	YES	FD
7439921	Lead	0.00105		0.0226		mg/L	PWD-01-1997	12/34	0.001-0.003	2.3E-002			1.5E-002	MCL	YES	FD
7439954	Magnesium	0.925		69.6		mg/L	PWX-01-1997	34/34	NA	7.0E+001				MCL	NO	NTX
7439965	Manganese	0.0171		0.923		mg/L	PWK-01-1997	31/34	0.001	9.2E-001		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
75092	Methylene Chloride	0.0002		0.0002		mg/L	PWRC-02-1997	2/36	0.001-0.005	2.0E-004		4.1E-003		SMCL	YES	FD
7440020	Nickel	0.0011		0.005		mg/L	PWRW-01-1997	12/34	0.001-0.04	5.0E-003		7.3E-001	1.0E-001	MCL	YES	FD
7440097	Potassium	1.47		5.31	J	mg/L	PWK-02-1997	30/34	5	5.3E+000		0.0E+000			NO	NTX
7782492	Selenium	0.0021		0.0021		mg/L	PWY-02-1997-AVG	1/34	0.002-0.005	2.1E-003		1.8E-001	5.0E-002	MCL	NO	IFD
7440235	Sodium	9.43		191		mg/L	PWRE-02-1997	33/34	2.6	1.9E+002					NO	NTX
RR005186	Sulfate	65		200		mg/L	PW03-01-1990	6/6	NA	2.0E+002			5.0E+002	MCL	NO	NTX
108883	Toluene	0.0003		0.0003		mg/L	PWI-01-1997-AVG	1/36	0.001-0.002	3.0E-004		7.5E-001	1.0E+000	MCL	NO	IFD
79016	Trichloroethene	0.0002		0.0003		mg/L	PWK-01-1997	2/36	0.001-0.002	3.0E-004		1.6E-003	5.0E-003	MCL	YES	FD
75014	Vinyl Chloride	0.0003		0.0006		mg/L	PWRE-01-1997-AVG	2/36	0.001-0.002	6.0E-004		1.9E-005	2.0E-003	MCL	YES	FD, ARV
7440666	Zinc	0.02825		1.56		mg/L	PWD-01-1997	15/34	0.006-0.065	1.6E+000		1.1E+001	5.0E+000	SMCL	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from statistical analysis. Follow Regional guidance and provide supporting information.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-6-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Area 5A Monitoring Wells
Exposure Point:	Lower Aquifer

File: LGWA5A05.wb4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	ackground Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
78933	2-Butanone	0.0055		0.0055		mg/L	MW07-01-1996-AVG	1/25	0.003-0.01	5.5E-003		1.9E+000			NO	IFD
67641	Acetone	0.02		0.02		mg/L	MW07-01-1997	1/26	0.003-0.024	2.0E-002		3.7E+000			NO	IFD
	Alkalinity	186		190		mg/L	MW07-02-1990	2/2	NA	1.9E+002					NO	NTX
7429905	Aluminum	0.0609		7.6		mg/L	MW50-01-1997-AVG	18/25	0.022-0.2	7.6E+000		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	0.39		0.39		mg/L	MW07-01-1990	1/2	0.45	3.9E-001		2.1E-001			YES	FD, ARV
7440382	Arsenic	0.00115		0.0049		mg/L	MW28-03-1997	7/27	0.002-0.00705	4.9E-003		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.102		0.628		mg/L	MW22-03-1997	23/25	0.2	6.3E-001		2.6E+000	2.0E+000	MCL	YES	FD
65850	Benzoic Acid	0.006		0.006		mg/L	MW28-01-1997-EPA	1/3	0.05	6.0E-003		1.5E+002			YES	FD
7440417	Beryllium	0.0011		0.0011		mg/L	MW28-03-1997	2/27	0.0002-0.005	1.1E-003		7.3E-002	4.0E-003	MCL	YES	FD
117817	bis(2-Ethylhexyl)phthalate	0.002		0.056		mg/L	MW36-01-1997	12/27	0.005-0.08	5.6E-002		4.8E-003	6.0E-003	MCL	YES	FD, ARV
7440439	Cadmium	0.0011		0.0011		mg/L	MW07-04-1997	1/25	0.0002-0.002	1.1E-003		1.8E-002	5.0E-003	MCL	NO	IFD
7440702	Calcium	49		254		mg/L	MW22-03-1997	25/25	NA	2.5E+002					NO	NTX
75150	Carbon Disulfide	0.0004		0.0004		mg/L	MW22-04-1997	1/30	0.001-0.01	4.0E-004		1.0E+000			NO	IFD
	Chemical Oxygen Demand	78		78		mg/L	MW07-01-1990	1/2	20-20	7.8E+001					NO	NTX
16887006	Chloride	11		12		mg/L	MW07-01-1990	2/2	NA	1.2E+001			2.5E+002	SMCL	NO	NTX
67663	Chloroform	0.003		0.003		mg/L	MW22-02-1997	1/30	0.001-0.01	3.0E-003		1.5E-004	1.0E-001	MCL	NO	IFD
74873	Chloromethane	0.0003	J	0.0003	J	mg/L	MW07-04-1997	1/30	0.001-0.01	3.0E-004		1.5E-003			NO	IFD
18540299	Chromium (total)	0.0054		0.108		mg/L	MW28-01-1997	19/25	0.00022-0.005	1.1E-001		1.1E-001			YES	FD
7440484	Cobalt	0.001		0.0067		mg/L	MW50-01-1997-AVG	17/25	0.001-0.05	6.7E-003		2.2E+000			YES	FD
7440508	Copper	0.0038		0.125		mg/L	MW22-03-1997	20/25	0.0018-0.02	1.3E-001		1.5E+000	1.3E+000	MCL	YES	FD
84742	Di-n-butylphthalate	0.001		0.001		mg/L	MW28-01-1997-EPA	1/27	0.005-0.08	1.0E-003		3.7E+000			NO	IFD
131113	Dimethylphthalate	0.009		0.009		mg/L	MW50-01-1997-AVG	1/27	0.005-0.08	9.0E-003		3.7E+002			NO	IFD
	Dissolved solids (total)	252		288	J	mg/L	MW07-02-1990	2/2	NA	2.9E+002			5.0E+002	SMCL	NO	NTX
7439896	Iron	0.0736		13.15	J	mg/L	MW50-01-1997-AVG	25/25	NA	1.3E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
7439921	Lead	0.0016		0.0116		mg/L	MW28-01-1997	18/25	0.002-0.0058	1.2E-002			1.5E-002	MCL	YES	FD
7439954	Magnesium	5.55	J	96.9		mg/L	MW36-1996	25/25	NA	9.7E+001					NO	NTX
7439965	Manganese	0.015		0.296		mg/L	MW36-1996	27/27	NA	3.0E-001		7.3E-001	5.0E-002	SMCL	YES	FD
7440020	Nickel	0.0065		0.0742		mg/L	MW28-01-1997	19/25	0.002-0.04	7.4E-002		7.3E-001	1.0E-001	MCL	YES	FD
14797558	Nitrate/Nitrite	0.91	J	0.91	J	mg/L	MW07-01-1990	1/2	0.03	9.1E-001		5.8E+001	1.0E+000	MCL	YES	FD
	Organic Carbon (total)	3.1		4.8		mg/L	MW07-01-1990	2/2	NA	4.8E+000					NO	NTX
108952	Phenol	0.001		0.33		mg/L	MW22-03-1997	19/27	0.01	3.3E-001		2.2E+001			YES	FD
7440097	Potassium	0.89		93.1		mg/L	MW22-01-1996	24/25	5	9.3E+001					NO	NTX
7782492	Selenium	0.0025		0.003		mg/L	MW22-04-1997	2/25	0.002-0.004	3.0E-003		1.8E-001	5.0E-002	MCL	YES	FD
7440235	Sodium	11.5		359.5	J	mg/L	MW50-01-1997-AVG	25/25	NA	3.6E+002					NO	NTX
RR005185	Sulfate	31		32		mg/L	MW07-01-1990	2/2	NA	3.2E+001			5.0E+002	MCL	NO	NTX

TABLE 2-8-3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Area 5A Monitoring Wells
Exposure Point:	Lower Aquifer

File: LOWA5A88.wk4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected oncentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	ackground Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
	Suspended solids (total)	703		888		mg/L	MW07-02-1990	2/2	NA	8.9E+002					NO	NTX
7440280	Thallium	0.0021		0.0036		mg/L	MW22-04-1997	2/27	0.001-0.006	3.6E-003		2.6E-003			YES	FD, ARV
108883	Toluene	0.001		0.001		mg/L	MW07-03-1997	2/30	0.001-0.01	1.0E-003		7.5E-001	1.0E+000	MCL	YES	FD
7440622	Vanadium	0.0011		0.0127		mg/L	MW50-01-1997-AVG	13/25	0.001-0.005	1.3E-002		2.6E-001			YES	FD
7440666	Zinc	0.0128		0.04245		mg/L	MW50-01-1997-AVG	8/25	0.01-0.0488	4.2E-002		1.1E+001	5.0E+000	SMCL	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from statistical analysis. Follow Regional guidance and provide supporting information.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-8-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 1
Exposure Point:	Upper Aquifer

File: UGWA195.wk4

CAS Number	Chemical	Minimum (1) Detected Concentration	Minimum Qualifier	Maximum (1) Detected Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
75343	1,1-Dichloroethane	0.006		0.026		mg/L	MW05-01-1994	3/11	0.005-2	2.6E-002		8.0E-001			YES	FD
95501	1,2-Dichlorobenzene	0.015		0.061		mg/L	MW03-01-1994	5/11	0.01-0.029	6.1E-002		6.4E-002	6.0E-001	MCL	YES	FD
540590	1,2-Dichloroethene (total)	0.003		0.014		mg/L	MW05-01-1994	2/11	0.005-2	1.4E-002		5.5E-002			YES	FD
541731	1,3-Dichlorobenzene	0.002		0.003		mg/L	MW05-02-1990	2/11	0.01-0.02	3.0E-003		1.4E-002			YES	FD
106467	1,4-Dichlorobenzene	0.003		0.01		mg/L	MW05-02-1990	5/11	0.01-0.02	1.0E-002		4.7E-004	7.5E-002	MCL	YES	FD, ARV
108601	2,2'-oxybis(1-Chloropropane)	0.034		0.3		mg/L	MW03-01-1989	4/11	0.01-0.02	3.0E-001		2.6E-004			YES	FD, ARV
105679	2,4-Dimethylphenol	0.005		0.11		mg/L	MW03-02-1990	4/11	0.01	1.1E-001		7.3E-001			YES	FD
91576	2-Methylnaphthalene	0.009		0.027		mg/L	MW05-02-1990	2/11	0.01-0.02	2.7E-002		1.5E+000			YES	FD
95487	2-Methylphenol	0.013	J	0.013	J	mg/L	MW03-01-1989	1/11	0.01-0.02	1.3E-002		1.8E+000			YES	FD
59507	4-chloro-3-Methylphenol	0.002		0.009		mg/L	MW03-01-1994	2/11	0.01	9.0E-003					NO	NTX
108101	4-methyl-2-Pentanone	0.006		0.006		mg/L	MW05-01-1994	1/11	0.01-2	6.0E-003		2.9E+000			YES	FD
106445	4-Methylphenol	0.002		0.078		mg/L	MW03-02-1990	3/11	0.01-0.02	7.8E-002		1.8E-001			YES	FD
	Alkalinity	323		661		mg/L	MW03-02-1990	8/8	NA	6.6E+002					NO	NTX
7429905	Aluminum	0.25		0.28		mg/L	MW02-01-1989	2/8	0.2	2.8E-001		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	3.74		11		mg/L	MW03-01-1989	8/8	NA	1.1E+001		2.1E-001			YES	FD, ARV
12672296	Aroclor-1248	0.0014		0.0026		mg/L	MW04-01-1989	2/11	0.0005-0.001	2.6E-003		3.3E-006			YES	FD, ARV
7440382	Arsenic	0.0041		0.0571		mg/L	MW05-01-1994	10/11	0.002	5.7E-002		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.25		0.79		mg/L	MW05-02-1990	7/8	0.2	7.9E-001		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	0.001		100	J	mg/L	MW03-02-1990	10/11	0.005	1.0E+002		3.6E-004	5.0E-003	MCL	YES	FD, ARV
65850	Benzoic Acid	0.013	J	0.013	J	mg/L	MW05-01-1989	1/8	0.05	1.3E-002		1.5E+002			YES	FD
111444	bis(2-Chloroethyl) ether	0.004		0.16		mg/L	MW03-01-1989	7/11	0.01	1.6E-001		6.1E-005			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	0.002		0.005		mg/L	MW03-01-1989	3/11	0.01-0.02	5.0E-003		4.8E-003	6.0E-003	MCL	YES	FD, ARV
7440439	Cadmium	0.0031		0.0031		mg/L	MW04-01-1989	1/8	0.0002-0.00043	3.1E-003		1.8E-002	5.0E-003	MCL	YES	FD
7440702	Calcium	168		219		mg/L	MW05-02-1990	8/8	NA	2.2E+002					NO	NTX
	Chemical Oxygen Demand	202		2300		mg/L	MW05-01-1989	7/8	20-20	2.3E+003					NO	NTX
16887006	Chloride	30		694		mg/L	MW05-02-1990	7/8	21-21	6.9E+002			2.5E+002	SMCL	NO	NTX
108907	Chlorobenzene	0.002		0.096		mg/L	MW05-01-1989	4/11	0.005-2	9.6E-002		3.5E-002			YES	FD, ARV
75003	Chloroethane	0.025		1.9		mg/L	MW03-02-1990	9/11	0.01	1.9E+000		3.6E-003			YES	FD, ARV
74873	Chloromethane	0.068	J	0.068	J	mg/L	MW03-02-1990	1/11	0.01-2	6.8E-002		1.5E-003			YES	FD, ARV
57125	Cyanide (total)	0.01	J	0.01	J	mg/L	MW04-01-1989	1/8	0.01	1.0E-002		7.3E-001			YES	FD
117840	Di-n-octylphthalate	0.021	J	0.021	J	mg/L	MW05-01-1994	1/11	0.01-0.02	2.1E-002		7.3E-001			YES	FD
84662	Diethylphthalate	0.003	J	0.009		mg/L	MW03-02-1990	3/11	0.01	9.0E-003		2.9E+001			YES	FD
	Dissolved solids (total)	580		1730		mg/L	MW05-02-1990	8/8	NA	1.7E+003			5.0E+002	SMCL	NO	NTX
100414	Ethyl Benzene	0.003		1.1		mg/L	MW05-02-1990	5/11	0.005-0.01	1.1E+000		1.3E+000			YES	FD
7439896	Iron	0.261		51		mg/L	MW03-02-1990	8/8	NA	5.1E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV

TABLE 2-6-4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 1
Exposure Point:	Upper Aquifer

File: UGWA165.wk4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7439954	Magnesium	17.6		31.5	J	mg/L	MW04-01-1989	5/8	21.1-32	3.2E+001					NO	NTX
7439965	Manganese	0.472		4.25		mg/L	MW04-01-1989	11/11	NA	4.3E+000		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
75092	Methylene Chloride	0.001	J	0.001	J	mg/L	MW02-02-1990	1/11	0.005-2	1.0E-003		4.1E-003			YES	FD
91203	Naphthalene	0.002		0.071		mg/L	MW05-01-1989	5/11	0.01	7.1E-002		1.5E+000			YES	FD
7440020	Nickel	0.048		0.053		mg/L	MW03-01-1989	2/8	0.04	5.3E-002		7.3E-001	1.0E-001	MCL	YES	FD
14797650	Nitrate/Nitrite	0.74	J	1.66	J	mg/L	MW02-02-1990	4/8	0.05-0.11	1.7E+000		3.7E+000	1.0E+000	MCL	YES	FD
	Organic Carbon (total)	16.2	J	100		mg/L	MW03-01-1989	8/8	NA	1.0E+002					NO	NTX
108952	Phenol	0.003		0.24		mg/L	MW03-02-1990	5/11	0.01-0.02	2.4E-001		2.2E+001			YES	FD
7440097	Potassium	4.9		14.6	J	mg/L	MW03-01-1989	8/8	NA	1.5E+001					NO	NTX
7782492	Selenium	0.0062	J	0.0062	J	mg/L	MW04-01-1989	1/8	0.002	6.2E-003		1.8E-001	5.0E-002	MCL	YES	FD
7440235	Sodium	12.7		444		mg/L	MW05-02-1990	6/8	10.7-55.9	4.4E+002					NO	NTX
RR005165	Sulfate	6		115		mg/L	MW05-02-1990	8/8	NA	1.2E+002			5.0E+002	MCL	NO	NTX
	Suspended solids (total)	1180		20900	J	mg/L	MW02-01-1989	8/8	NA	2.1E+004					NO	NTX
7440280	Thallium	0.0011		0.0036		mg/L	MW04-01-1994	2/11	0.001-0.005	3.6E-003		2.8E-003			YES	FD, ARV
108883	Toluene	0.006		2.3		mg/L	MW03-02-1990	3/11	0.005-2	2.3E+000		7.5E-001	1.0E+000	MCL	YES	FD, ARV
7440622	Vanadium	0.0024	J	0.0202	J	mg/L	MW03-01-1989	5/8	0.0074-0.0165	2.0E-002		2.6E-001			YES	FD
75014	Vinyl Chloride	0.016		0.016		mg/L	MW05-01-1994	1/11	0.01-2	1.6E-002		1.9E-005	2.0E-003	MCL	YES	FD, ARV
1330207	Xylenes (total)	0.063		3		mg/L	MW03-02-1990	5/11	0.005-0.01	3.0E+000		1.2E+001	1.0E+001	MCL	YES	FD
7440666	Zinc	0.011		0.51		mg/L	MW04-01-1989	7/8	0.12	5.1E-001		1.1E+001	5.0E+000	SMCL	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1996. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-8-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 4B
Exposure Point:	Upper Aquifer

File: UGWA4B[illegible]

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
75343	1,1-Dichloroethane	0.0003	J	0.006		mg/L	MW04-02-1990	3/32	0.001-2	6.0E-003		8.0E-001			YES	FD
95501	1,2-Dichlorobenzene	0.023	J	0.051		mg/L	MW03-01-1994	2/28	0.005-0.25	5.1E-002		6.4E-002	6.0E-001	MCL	YES	FD
107062	1,2-Dichloroethane	0.0002		0.002		mg/L	MW11-02-1990	3/32	0.001-2	2.0E-003		1.2E-004	5.0E-003	MCL	YES	FD, ARV
540590	1,2-Dichloroethene (total)	0.002		0.004		mg/L	MW39-02-1997	4/24	0.005-2	4.0E-003		5.5E-002			YES	FD
106467	1,4-Dichlorobenzene	0.003		0.003		mg/L	MW03-01-1989	2/31	0.005-0.25	3.0E-003		4.7E-004	7.5E-002	MCL	YES	FD, ARV
108601	2,2'-oxybis(1-Chloropropane)	0.01		0.3		mg/L	MW03-01-1989	6/31	0.005-0.02	3.0E-001		2.6E-004			YES	FD, ARV
105679	2,4-Dimethylphenol	0.005		0.11		mg/L	MW03-02-1990	3/28	0.005-0.05	1.1E-001		7.3E-001			YES	FD
606202	2,6-Dinitrotoluene	0.0009	J	0.0009	J	mg/L	MW48-01-1996	1/31	0.005-0.05	9.0E-004		3.7E-002			NO	IFD
95487	2-Methylphenol	0.013	J	0.013	J	mg/L	MW03-01-1989	1/28	0.005-0.05	1.3E-002		1.8E+000			NO	IFD
108101	4-chloro-3-Methylphenol	0.009		0.009		mg/L	MW03-01-1994	1/28	0.005-0.05	9.0E-003		2.9E+000			NO	IFD
106445	4-Methylphenol	0.045	J	0.078		mg/L	MW03-02-1990	2/31	0.005-0.05	7.8E-002		1.8E-001			YES	FD
	Alkalinity	128		661		mg/L	MW03-02-1990	6/6	NA	6.6E+002					NO	NTX
7429905	Aluminum	0.059		1.6		mg/L	MW11-04-1997	16/27	0.0426-0.273	1.6E+000		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	0.2		11		mg/L	MW03-01-1989	8/9	0.2	1.1E+001		2.1E-001			YES	FD, ARV
120127	Anthracene	0.0105		0.0105		mg/L	MW49-03-1997-AVG	1/28	0.005-0.05	1.1E-002		1.1E+001			NO	IFD
7440360	Antimony	0.0015		0.002		mg/L	MW49-01-1997	2/25	0.001-0.0107	2.0E-003		1.5E-002	6.0E-003	MCL	YES	FD
12672296	Aroclor-1248	0.0014		0.0026		mg/L	MW04-01-1989	2/27	0.0002-0.001	2.6E-003		3.3E-005			YES	FD, ARV
7440382	Arsenic	0.0018		0.0457		mg/L	MW03-01-1994	17/30	0.002-0.0043	4.6E-002		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.017		0.52		mg/L	MW03-01-1989	25/27	0.2	5.2E-001		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	0.001		100	J	mg/L	MW03-02-1990	22/32	0.001-0.01	1.0E+002		3.6E-004	5.0E-003	MCL	YES	FD, ARV
7440417	Beryllium	0.00105		0.0013		mg/L	MW48-01-1997-EPA	2/30	0.0002-0.005	1.3E-003		7.3E-002	4.0E-003	MCL	YES	FD
	Biological Oxygen Demand	11.9		16.5		mg/L	MW48-03-1997	2/3	2	1.7E+001					NO	NTX
111444	bis(2-Chloroethyl) ether	0.001		0.16		mg/L	MW03-01-1989	12/31	0.005-0.05	1.6E-001		6.1E-005			YES	FD, ARV
111444	bis(2-Ethylhexyl)phthalate	0.002		0.0155		mg/L	MW49-03-1997-AVG	6/31	0.005-0.05	1.6E-002		4.8E-003	6.0E-003	MCL	YES	FD, ARV
75274	Bromodichloromethane	0.0009		0.0009		mg/L	MW48-01-1997-EPA	1/32	0.001-2	9.0E-004		1.7E-004			NO	IFD
7440439	Cadmium	0.00032		0.0031		mg/L	MW04-01-1989	2/27	0.0002-0.001	3.1E-003		1.8E-002	6.0E-003	MCL	YES	FD
7440702	Calcium	32.1		218		mg/L	MW03-01-1989	27/27	NA	2.2E+002					NO	NTX
	Chemical Oxygen Demand	78		1540		mg/L	MW03-01-1989	5/6	20	1.5E+003					NO	NTX
16887006	Chloride	17		517		mg/L	MW04-02-1990	6/6	NA	5.2E+002			2.5E+002	SMCL	NO	NTX
75003	Chloroethane	0.002		1.9		mg/L	MW03-02-1990	20/32	0.001-0.01	1.9E+000		3.6E-003			YES	FD, ARV
67663	Chloroform	0.001		0.001		mg/L	MW48-01-1997-EPA	1/32	0.001-2	1.0E-003		1.5E-004	1.0E-001	MCL	NO	IFD
74873	Chloromethane	0.0002	J	0.068	J	mg/L	MW03-02-1990	3/32	0.001-2	6.8E-002		1.5E-003			YES	FD, ARV
16540299	Chromium (total)	0.0019		0.0114		mg/L	MW49-03-1997-AVG	12/27	0.00033-0.01	1.1E-002		1.1E-001			YES	FD
156592	cis-1,2-Dichloroethene	0.0001	J	0.0002	J	mg/L	MW11-04-1997	2/8	0.001-0.25	2.0E-004		6.1E-002			YES	FD
7440484	Cobalt	0.0012		0.0035		mg/L	MW48-03-1997	13/27	0.001-0.05	3.5E-003		2.2E+000			YES	FD

TABLE 2-8-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 4B
Exposure Point:	Upper Aquifer

File: UGWA4B[illegible]

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected oncentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	ackground Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440508	Copper	0.0034		0.0218		mg/L	MW11-04-1997	6/27	0.001-0.023	2.2E-002		1.5E+000	1.3E+000	MCL	YES	FD
57125	Cyanide (total)	0.01	J	0.01	J	mg/L	MW04-01-1989	1/24	0.008-0.01	1.0E-002		7.3E-001			NO	IFD
84662	Diethylphthalate	0.003	J	0.009		mg/L	MW03-02-1990	3/28	0.005-0.05	9.0E-003		2.9E+001			YES	FD
	Dissolved solids (total)	280		1260		mg/L	MW04-02-1990	6/6	NA	1.3E+003			5.0E+002	SMCL	NO	NTX
100414	Ethyl Benzene	0.69		0.78		mg/L	MW03-02-1990	2/32	0.001-0.5	7.8E-001		1.3E+000			YES	FD
7439896	Iron	0.522		51		mg/L	MW03-02-1990	27/27	NA	5.1E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
78591	Isophorone	0.001		0.0075		mg/L	MW49-02-1997-AVG	5/31	0.005-0.02	7.5E-003		7.0E-002			YES	FD
	Lead	0.0012		0.0077		mg/L	MW48-03-1997	6/27	0.001-0.0079	7.7E-003			1.5E-002	MCL	YES	FD
7439954	Magnesium	7.2		31.5	J	mg/L	MW04-01-1989	26/27	21.1	3.2E+001					NO	NTX
7439965	Manganese	0.128		4.25		mg/L	MW04-01-1989	30/30	NA	4.3E+000		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
7439976	Mercury	0.0003		0.0003		mg/L	MW48-01-1997-EPA	1/27	0.0002-0.0005	3.0E-004			2.0E-003	MCL	NO	IFD
75092	Methylene Chloride	0.04	J	0.07	J	mg/L	MW48-01-1996	2/32	0.002-2	7.0E-002		4.1E-003			YES	FD, ARV
91203	Naphthalene	0.002		0.003		mg/L	MW03-02-1990	2/31	0.005-0.05	3.0E-003		7.3E-001			YES	FD
7440020	Nickel	0.0045		0.053		mg/L	MW03-01-1989	15/27	0.0031-0.712	5.3E-002		7.3E-001	1.0E-001	MCL	YES	FD
14797550	Nitrate	0.023		0.023		mg/L	MW48-03-1997	1/1	NA	2.3E-002		3.7E+000	1.0E+001	MCL	YES	FD
	Nitrate/Nitrite	0.74	J	1.31	J	mg/L	MW03-02-1990	2/8	0.02-0.57	1.3E+000			1.0E+000	MCL	NO	NTX
	Nitrogen (Kjeldahl)	3.77	J	8.86	J	mg/L	MW48-02-1997	3/3	NA	8.9E+000					NO	NTX
	Organic Carbon (total)	4.4		100		mg/L	MW03-01-1989	9/9	NA	1.0E+002					NO	NTX
108952	Phenol	0.003		0.24		mg/L	MW03-02-1990	18/31	0.01-0.059	2.4E-001		2.2E+001			YES	FD
7440097	Potassium	1.15	J	14.6	J	mg/L	MW03-01-1989	26/27	8.47	1.5E+001					NO	NTX
7782492	Selenium	0.0062	J	0.0062	J	mg/L	MW04-01-1989	1/27	0.002-0.0024	6.2E-003		1.8E-001	5.0E-002	MCL	NO	IFD
7440235	Sodium	4.15		252		mg/L	MW04-02-1990	24/27	3.31-55.9	2.5E+002					NO	NTX
RR005165	Sulfate	6		86		mg/L	MW11-02-1990	7/9	2	8.6E+001			5.0E+002	MCL	NO	NTX
	Suspended solids (total)	526		10400	J	mg/L	MW03-01-1989	6/6	NA	1.0E+004					NO	NTX
127184	Tetrachloroethene	0.001		0.001		mg/L	MW11-02-1997	1/29	0.001-2	1.0E-003		1.1E-003	5.0E-003	MCL	NO	IFD
7440280	Thallium	0.0012		0.004		mg/L	MW48-01-1997	3/30	0.001-0.005	4.0E-003		2.6E-003			YES	FD, ARV
108883	Toluene	0.002		2.3		mg/L	MW03-02-1990	2/32	0.001-2	2.3E+000		7.5E-001	1.0E+000	MCL	YES	FD, ARV
156605	trans-1,2-Dichloroethene	0.001		0.004		mg/L	MW39-01-1996	3/8	0.001-0.25	4.0E-003		1.2E-001	1.0E-001	MCL	YES	FD
7440622	Vanadium	0.0014		0.0203		mg/L	MW11-04-1997	15/27	0.001-0.02	2.0E-002		2.6E-001			YES	FD

TABLE 2-8-5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 4B
Exposure Point:	Upper Aquifer

File: UGWA4B85.wk4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected oncentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	ackground Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
75014	Vinyl Chloride	0.0007		0.0009		mg/L	MW39-01-1996	2/32	0.001-2	9.0E-004		1.9E-005	2.0E-003	MCL	YES	FD, ARV
1330207	Xylenes (total)	0.75		3		mg/L	MW03-02-1990	2/32	0.001-1.2	3.0E+000		1.2E+001	1.0E+001	MCL	YES	FD
7440666	Zinc	0.0046		0.51		mg/L	MW04-01-1989	10/27	0.0062-0.0596	5.1E-001		1.1E+001	5.0E+000	SMCL	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-6-6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5A
Exposure Point:	Upper Aquifer

File: UGWA5A6S.wk4

CAS Number	Chemical	Minimum (1) Detected Concentration	Minimum Qualifier	Maximum (1) Detected Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background (2) Value	Reference (3) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (4) Contaminant Deletion or Selection
75343	1,1-Dichloroethane	0.003		0.021		mg/L	MW06-01-1996	3/14	0.005-0.2	2.1E-002		8.0E-001			YES	FD
95501	1,2-Dichlorobenzene	0.001		0.005	J	mg/L	MW45-03-1997	4/13	0.005-0.12	5.0E-003		6.4E-002	6.0E-001	MCL	YES	FD
107062	1,2-Dichloroethane	0.003		0.003		mg/L	MW06-03-1997	1/14	0.001-0.2	3.0E-003		1.2E-004	5.0E-003	MCL	YES	FD, ARV
540590	1,2-Dichloroethene (total)	0.002		0.026		mg/L	MW06-01-1996	4/10	0.005-0.2	2.6E-002		5.5E-002			YES	FD
106467	1,4-Dichlorobenzene	0.003	J	0.011		mg/L	MW45-01-1997-AVG	2/14	0.001-0.12	1.1E-002		4.7E-004	7.5E-002	MCL	YES	FD, ARV
108601	2,2'-oxybis(1-Chloropropane)	0.006		0.0095		mg/L	MW45-01-1997-AVG	3/14	0.005-0.02	9.5E-003		2.6E-004			YES	FD, ARV
105679	2,4-Dimethylphenol	0.003		0.058		mg/L	MW06-01-1994	3/11	0.005-0.02	5.8E-002		7.3E-001			YES	FD
91576	2-Methylnaphthalene	0.004	J	0.007		mg/L	MW45-02-1997	5/14	0.005-0.02	7.0E-003		1.2E-001			YES	FD
108101	4-methyl-2-Pentanone	0.002		0.002		mg/L	MW06-01-1997-EPA-AVG	1/14	0.01-0.62	2.0E-003		2.9E+000			YES	FD
	Alkalinity	492		591		mg/L	MW06-01-1989	2/2	NA	5.9E+002					NO	NTX
7429905	Aluminum	0.106		0.343		mg/L	MW45-04-1997	7/13	0.0672-0.776	3.4E-001		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	1.02		4		mg/L	MW06-01-1989	4/4	NA	4.0E+000		2.1E-001			YES	FD, ARV
7440360	Antimony	0.0011		0.0021		mg/L	MW06-04-1997	2/12	0.001-0.0068	2.1E-003		1.5E-002	6.0E-003	MCL	YES	FD
7440382	Arsenic	0.006		0.112		mg/L	MW06-04-1997	14/14	NA	1.1E-001		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.0645		0.38		mg/L	MW06-01-1989	13/13	NA	3.8E-001		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	0.033		3		mg/L	MW06-01-1994	14/14	NA	3.0E+000		3.6E-004	5.0E-003	MCL	YES	FD, ARV
207089	Benzo(k)fluoranthene	0.003		0.003		mg/L	MW06-01-1997-EPA-AVG	1/12	0.005-0.02	3.0E-003		9.2E-004			YES	FD, ARV
65850	Benzoic Acid	0.009		0.011	J	mg/L	MW06-01-1989	2/3	0.02	1.1E-002		1.5E+002			YES	FD
319857	beta-BHC	0.00005	J	0.00005	J	mg/L	MW06-01-1997	1/12	0.00001-0.00005	5.0E-005		3.7E-006			YES	FD, ARV
	Biological Oxygen Demand	3.16		3.66		mg/L	MW45-03-1997	2/2	NA	3.7E+000					NO	NTX
111444	bis(2-Chloroethyl) ether	0.004		0.074		mg/L	MW06-04-1997	13/14	0.005	7.4E-002		6.1E-006			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	0.01		0.029		mg/L	MW06-02-1990	3/14	0.004-0.02	2.9E-002		4.8E-003	6.0E-003	MCL	YES	FD, ARV
7440439	Cadmium	0.00025		0.0003		mg/L	MW06-02-1990	2/13	0.0002-0.0021	3.0E-004		1.8E-002	5.0E-003	MCL	YES	FD
7440702	Calcium	89.1		216		mg/L	MW06-01-1996	13/13	NA	2.2E+002					NO	NTX
	Chemical Oxygen Demand	227		775		mg/L	MW06-01-1989	2/2	NA	7.8E+002					NO	NTX
16887006	Chloride	144		350		mg/L	MW06-02-1990	2/2	NA	3.5E+002			2.5E+002	SMCL	NO	NTX
108907	Chlorobenzene	0.001		0.042		mg/L	MW45-02-1997	6/14	0.001-0.2	4.2E-002		3.5E-002			YES	FD, ARV
75003	Chloroethane	0.033		0.72		mg/L	MW06-01-1996	14/14	NA	7.2E-001		3.6E-003			YES	FD, ARV
16540299	Chromium (total)	0.0034		0.0616		mg/L	MW06-04-1997	8/13	0.00096-0.029	6.2E-002		1.1E-001			YES	FD
218019	Chrysene	0.003		0.003		mg/L	MW06-01-1997-EPA-AVG	1/13	0.005-0.02	3.0E-003		9.2E-003			YES	FD
156592	cis-1,2-Dichloroethene	0.002		0.002		mg/L	MW06-01-1997-EPA-AVG	1/4	0.01-0.12	2.0E-003		6.1E-002			YES	FD
7440484	Cobalt	0.0015		0.0042		mg/L	MW45-01-1997-AVG	9/13	0.006-0.05	4.2E-003		2.2E+000			YES	FD
7440508	Copper	0.0052		0.0732		mg/L	MW45-01-1997-AVG	7/13	0.0044-0.021	7.3E-002		1.5E+000	1.3E+000	MCL	YES	FD
57125	Cyanide (total)	0.0115		0.0174		mg/L	MW06-01-1997	3/12	0.01	1.7E-002		7.3E-001			YES	FD
117840	Di-n-octylphthalate	0.003		0.047	J	mg/L	MW06-01-1994	2/13	0.005-0.02	4.7E-002		7.3E-001			YES	FD
84662	Diethylphthalate	0.001		0.002		mg/L	MW06-01-1996	2/13	0.005-0.02	2.0E-003		2.9E+001			YES	FD
	Dissolved solids (total)	636		1110		mg/L	MW06-02-1990	2/2	NA	1.1E+003			5.0E+002	SMCL	NO	NTX
100414	Ethyl Benzene	0.01	J	0.77		mg/L	MW06-01-1994	7/14	0.001-0.08	7.7E-001		1.3E+000			YES	FD
	gamma-Chlordane	0.00002	J	0.00002	J	mg/L	MW06-01-1997	1/12	0.00001-0.0005	2.0E-005					NO	NTX

TABLE 2-8-6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5A
Exposure Point:	Upper Aquifer

File: UGWA5A88.wk4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion (4)
7439896	Iron	1.165		26.8		mg/L	MW06-04-1997	13/13	NA	2.7E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
78591	Isophorone	0.002		0.036		mg/L	MW06-01-1989	8/14	0.005-0.02	3.5E-002		7.0E-002			YES	FD
	Lead	0.0011		0.0156		mg/L	MW06-01-1997-EPA-AVG	10/13	0.003-0.0385	1.6E-002			1.5E-002	MCL	YES	FD
7439954	Magnesium	23.2		37.6		mg/L	MW06-01-1996	12/13	31.4	3.8E+001					NO	NTX
7439965	Manganese	0.354		3.99		mg/L	MW06-02-1990	14/14	NA	4.0E+000		7.3E-001	5.0E-002	SMCL	YES	FD, ARV
75092	Methylene Chloride	0.002		0.017		mg/L	MW06-01-1996	2/14	0.002-0.25	1.7E-002		4.1E-003			YES	FD, ARV
91203	Naphthalene	0.007		0.14		mg/L	MW45-02-1997	6/14	0.005-0.02	1.4E-001		1.5E+000			YES	FD
7440020	Nickel	0.0062		0.0622	J	mg/L	MW06-04-1997	10/13	0.0076-0.04	6.2E-002		7.3E-001	1.0E-001	MCL	YES	FD
14797650	Nitrate/Nitrite	0.509		1.57	J	mg/L	MW06-02-1990	2/3	0.06	1.6E+000		3.7E+000	1.0E+000	MCL	YES	FD
	Nitrogen (Kjeldahl)	1.36	J	1.75		mg/L	MW45-03-1997	2/2	NA	1.8E+000					NO	NTX
	Organic Carbon (total)	5.09		47		mg/L	MW06-01-1989	4/4	NA	4.7E+001					NO	NTX
87865	Pentachlorophenol	0.003		0.003		mg/L	MW06-02-1990	1/12	0.02-0.05	3.0E-003		5.6E-004	1.0E-003	MCL	YES	FD, ARV
108952	Phenol	0.003		0.064		mg/L	MW06-01-1994	12/14	0.01-0.029	6.4E-002		2.2E+001			YES	FD
7440097	Potassium	5.35		27.4	J	mg/L	MW06-01-1996	12/13	6.9	2.7E+001					NO	NTX
7782492	Selenium	0.0021	J	0.0026		mg/L	MW06-04-1997	2/13	0.002-0.003	2.6E-003		1.8E-001	5.0E-002	MCL	YES	FD
7440235	Sodium	70.9		610.5		mg/L	MW06-01-1997-EPA-AVG	13/13	NA	6.1E+002					NO	NTX
RR005186	Sulfate	9.12		44		mg/L	MW06-02-1990	3/4	2	4.4E+001			5.0E+002	MCL	NO	NTX
	Suspended solids (total)	4170		14800	J	mg/L	MW06-01-1989	2/2	NA	1.5E+004					NO	NTX
156605	trans-1,2-Dichloroethene	0.003		0.003		mg/L	MW06-01-1997-EPA-AVG	1/4	0.01-0.12	3.0E-003		1.2E-001	1.0E-001	MCL	YES	FD
7440622	Vanadium	0.0016		0.0259	J	mg/L	MW06-01-1989	3/13	0.001-0.02	2.6E-002		2.6E-001			YES	FD
75014	Vinyl Chloride	0.003		0.004		mg/L	MW06-03-1997	2/14	0.001-0.2	4.0E-003		1.9E-005	2.0E-003	MCL	YES	FD, ARV
1330207	Xylenes (total)	0.018	J	3.9		mg/L	MW06-01-1994	11/14	0.001-0.01	3.9E+000		1.2E+001	1.0E+001	MCL	YES	FD
7440666	Zinc	0.0064		0.886		mg/L	MW06-01-1989	3/13	0.0105-0.04	8.9E-001		1.1E+001	5.0E+000	SMCL	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.

Definitions: NA = Not Applicable and/or Available

TABLE 2-8-7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5B
Exposure Point:	Upper Aquifer

File: UGWA5B6.wk4

CAS Number	Chemical	Minimum Detected Concentration [1]	Minimum Qualifier	Maximum Detected oncentration [1]	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	ackground Value [2]	Reference Toxicity Value [3]	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection [4]
606202	2,6-Dinitrotoluene	0.0009	J	0.0009	J	mg/L	MW48-01-1996	1/6	0.005-0.02	9.0E-004		3.7E-002			YES	FD
7429905	Aluminum	0.059		0.33		mg/L	MW48-03-1997	2/6	0.0461-0.254	3.3E-001		3.7E+001	2.0E-001	SMCL	YES	FD
7664417	Ammonia	7.41		10	J	mg/L	MW48-02-1997	2/2	NA	1.0E+001					NO	NTX
7440360	Antimony	0.0015		0.0015		mg/L	MW48-01-1997	1/6	0.001-0.002	1.5E-003		1.5E-002	6.0E-003	MCL	YES	FD
7440382	Arsenic	0.005		0.0142		mg/L	MW48-01-1996	5/6	0.002	1.4E-002		4.5E-005	5.0E-002	MCL	YES	FD, ARV
7440393	Barium	0.0583	J	0.16		mg/L	MW48-01-1996	6/6	NA	1.6E-001		2.6E+000	2.0E+000	MCL	YES	FD
71432	Benzene	3.5		9.5		mg/L	MW48-03-1997	6/6	NA	9.5E+000		3.6E-004	5.0E-003	MCL	YES	FD, ARV
7440417	Beryllium	0.0013		0.0013		mg/L	MW48-01-1997-EPA	1/6	0.0002-0.001	1.3E-003		7.3E-002	4.0E-003	MCL	YES	FD
	Biological Oxygen Demand	11.9		16.5		mg/L	MW48-03-1997	2/2	NA	1.7E+001					NO	NTX
111444	bis(2-Chloroethyl) ether	0.01		0.018		mg/L	MW48-02-1997	3/6	0.005-0.01	1.8E-002		6.1E-005			YES	FD, ARV
117817	bis(2-Ethylhexyl)phthalate	0.004		0.004		mg/L	MW48-01-1997-EPA	1/6	0.005-0.02	4.0E-003		4.8E-003	6.0E-003	MCL	YES	FD
75274	Bromodichloromethane	0.0009		0.0009		mg/L	MW48-01-1997-EPA	1/6	0.01-0.5	9.0E-004		1.7E-004			YES	FD, ARV
7440702	Calcium	80.4		142		mg/L	MW48-01-1996	6/6	NA	1.4E+002					NO	NTX
75003	Chloroethane	0.3		1		mg/L	MW48-01-1996	6/6	NA	1.0E+000		3.6E-003			YES	FD, ARV
67663	Chloroform	0.001		0.001		mg/L	MW48-01-1997-EPA	1/6	0.01-0.5	1.0E-003		1.5E-004	1.0E-001	MCL	YES	FD, ARV
74873	Chloromethane	0.038	J	0.038	J	mg/L	MW48-04-1997	1/6	0.001-0.5	3.8E-002		1.5E-003			YES	FD, ARV
18540299	Chromium (total)	0.0019		0.0078		mg/L	MW48-03-1997	3/6	0.0039-0.01	7.8E-003		1.1E-001			YES	FD
7440484	Cobalt	0.0026		0.0035		mg/L	MW48-03-1997	3/6	0.001-0.01	3.5E-003		2.2E+000			YES	FD
7440508	Copper	0.0034		0.0134		mg/L	MW48-03-1997	2/6	0.001-0.0136	1.3E-002		1.5E+000	1.3E+000	MCL	YES	FD
7439896	Iron	12.5	J	30.8	J	mg/L	MW48-01-1996	6/6	NA	3.1E+001		1.1E+001	3.0E-001	SMCL	YES	FD, ARV
78591	Isophorone	0.001		0.001		mg/L	MW48-01-1997	1/6	0.005-0.02	1.0E-003		7.0E-002			YES	FD
7439921	Lead	0.0077		0.0077		mg/L	MW48-03-1997	1/6	0.001-0.0034	7.7E-003			1.5E-002	MCL	YES	FD
7439954	Magnesium	13	J	20.1		mg/L	MW48-01-1996	6/6	NA	2.0E+001					NO	NTX
7439965	Manganese	0.388		0.688	J	mg/L	MW48-01-1996	6/6	NA	6.9E-001		7.3E-001	5.0E-002	SMCL	YES	FD
7439976	Mercury	0.0003		0.0003		mg/L	MW48-01-1997-EPA	1/6	0.0002	3.0E-004			2.0E-003	MCL	YES	FD
75092	Methylene Chloride	0.07	J	0.07	J	mg/L	MW48-01-1996	1/6	0.003-0.5	7.0E-002		4.1E-003			YES	FD, ARV
7440020	Nickel	0.0066		0.019		mg/L	MW48-03-1997	3/6	0.0157-0.032	1.9E-002		7.3E-001	1.0E-001	MCL	YES	FD
14797558	Nitrate	0.023		0.023		mg/L	MW48-03-1997	1/1	NA	2.3E-002		5.8E+001	1.0E+001	MCL	YES	FD
	Nitrogen (Kjeldahl)	7.82		8.85	J	mg/L	MW48-02-1997	2/2	NA	8.9E+000					NO	NTX
	Organic Carbon (total)	12		16.3		mg/L	MW48-02-1997	2/2	NA	1.6E+001					NO	NTX
108952	Phenol	0.008	J	0.11		mg/L	MW48-01-1996	6/6	NA	1.1E-001		2.2E+001			YES	FD
7440097	Potassium	3.84	J	8.27	J	mg/L	MW48-03-1997	5/6	6.47	8.3E+000					NO	NTX

TABLE 2-8-7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 6B
Exposure Point:	Upper Aquifer

File: UGWA6B6B.wk4

CAS Number	Chemical	Minimum Detected Concentration (1)	Minimum Qualifier	Maximum Detected concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency*	Range of Detection Limits	Concentration Used for Comparison	Background Value (2)	Reference Toxicity Value (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (4)
7440235	Sodium	25.1		52.1		mg/L	MW48-01-1996	6/6	NA	5.2E+001					NO	NTX
7440280	Thallium	0.0012		0.004		mg/L	MW48-01-1997	2/6	2.0E-003	4.0E-003		2.6E-003			YES	FD, ARV
108883	Toluene	0.002		0.002		mg/L	MW48-01-1997-EPA	1/6	0.01-0.5	2.0E-003		7.5E-001	1.0E+000	MCL	YES	FD
156605	trans-1,2-Dichloroethene	0.001		0.001		mg/L	MW48-01-1997-EPA	1/3	0.01-0.25	1.0E-003		1.2E-001	1.0E-001	MCL	YES	FD
7440622	Vanadium	0.0016		0.0024		mg/L	MW48-01-1997	3/6	0.001-0.02	2.4E-003		2.6E-001			YES	FD
7440666	Zinc	0.0046		0.0046		mg/L	MW48-04-1997	1/6	0.0062-0.0529	4.6E-003		1.1E+001	5.0E+000	SMCL	YES	FD

* Chemicals which were not detected at all are not included here.

(1) Minimum/maximum detected concentration.

(2) N/A - Refer to supporting information for background discussion.

(3) EPA Region III Risk-Based Concentration Table, October 01, 1998. Contaminants were not screened out based upon toxicity.

(4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)
Frequent Detection (FD)
Toxicity Information Available (TX)
Above Reference Toxicity Value (ARV)

Deletion Reason: Infrequent Detection (IFD) = FD < 0.05 or 1/20 (EPA, 1989)
Background Levels (BKG)
No Toxicity Information (NTX)

Definitions:
NA = Not Applicable and/or Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 2-9-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Surface Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,2-Trichloroethane	mg/kg	7.31E-002	2.24E-001	1.30E-002		mg/kg	1.30E-002	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	7.31E-002	2.21E-001	1.20E-002		mg/kg	1.20E-002	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	2.70E-001	3.50E-001	3.40E-001		mg/kg	3.40E-001	Max	Site-Wide			
3,3'-Dichlorobenzidine	mg/kg	2.61E-001	3.33E-001	2.10E-001		mg/kg	2.10E-001	Max	Site-Wide			
Aluminum	mg/kg	1.12E+004	1.68E+004	2.53E+004	J	mg/kg	1.68E+004	95 UCL	Site-Wide			
Anthracene	mg/kg	2.44E-001	3.70E-001	8.90E-002		mg/kg	8.90E-002	Max	Site-Wide			
Antimony	mg/kg	4.34E-001	9.41E-001	1.75E+000	J	mg/kg	9.41E-001	95 UCL	Site-Wide			
Aroclor-1242	mg/kg	2.32E-001	5.04E-001	1.45E+000		mg/kg	5.04E-001	95 UCL	Site-Wide			
Aroclor-1248	mg/kg	2.66E-001	6.71E-001	2.20E+000		mg/kg	6.71E-001	95 UCL	Site-Wide			
Aroclor-1254	mg/kg	1.53E+000	1.64E+001	5.50E+000		mg/kg	5.50E+000	Max	Site-Wide			
Aroclor-1260	mg/kg	2.81E-001	8.11E-001	1.70E+000		mg/kg	8.11E-001	95 UCL	Site-Wide			
Arsenic	mg/kg	2.45E+000	2.77E+000	3.30E+000		mg/kg	2.77E+000	95 UCL	Site-Wide			
Barium	mg/kg	1.18E+002	1.88E+002	2.39E+002		mg/kg	1.88E+002	95 UCL	Site-Wide			
Benzo(a)anthracene	mg/kg	2.41E-001	4.02E-001	5.90E-002		mg/kg	5.90E-002	Max	Site-Wide			
Benzo(a)pyrene	mg/kg	2.34E-001	3.69E-001	8.25E-002		mg/kg	8.25E-002	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	2.36E-001	3.53E-001	8.60E-002		mg/kg	8.60E-002	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	2.43E-001	3.68E-001	7.25E-002		mg/kg	7.25E-002	Max	Site-Wide			
Beryllium	mg/kg	2.22E+000	9.42E+000	5.80E+000		mg/kg	5.80E+000	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	2.44E+000	1.16E+001	9.80E+000		mg/kg	9.80E+000	Max	Site-Wide			
Cadmium	mg/kg	1.11E+000	1.66E+000	5.20E+000		mg/kg	1.66E+000	95 UCL	Site-Wide			

TABLE 2-9-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Surface Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Carbon Disulfide	mg/kg	7.24E-002	2.45E-001	2.00E-003		mg/kg	2.00E-003	Max	Site-Wide			
Chloroform	mg/kg	7.21E-002	2.57E-001	3.00E-003		mg/kg	3.00E-003	Max	Site-Wide			
Chromium (total)	mg/kg	2.40E+001	3.25E+001	7.06E+001		mg/kg	3.25E+001	95 UCL	Site-Wide			
Chrysene	mg/kg	2.33E-001	3.74E-001	7.40E-002		mg/kg	7.40E-002	Max	Site-Wide			
Cobalt	mg/kg	2.83E+000	3.59E+000	4.50E+000		mg/kg	3.59E+000	95 UCL	Site-Wide			
Copper	mg/kg	2.09E+001	2.85E+001	5.53E+001	J	mg/kg	2.85E+001	95 UCL	Site-Wide			
Cyanide (total)	mg/kg	5.84E-001	1.00E+000	1.20E+000		mg/kg	1.00E+000	95 UCL	Site-Wide			
Di-n-butylphthalate	mg/kg	2.51E-001	3.71E-001	5.10E-002		mg/kg	5.10E-002	Max	Site-Wide			
Di-n-octylphthalate	mg/kg	2.34E-001	3.48E-001	1.10E-001		mg/kg	1.10E-001	Max	Site-Wide			
Fluoranthene	mg/kg	2.36E-001	3.55E-001	9.80E-002		mg/kg	9.80E-002	Max	Site-Wide			
Hexachlorobenzene	mg/kg	2.48E-001	4.21E-001	2.90E-002		mg/kg	2.90E-002	Max	Site-Wide			
Indeno(1,2,3-cd)pyrene	mg/kg	2.47E-001	3.76E-001	4.40E-002		mg/kg	4.40E-002	Max	Site-Wide			
Iron	mg/kg	6.34E+003	8.51E+003	1.51E+004	J	mg/kg	8.51E+003	95 UCL	Site-Wide			
Isophorone	mg/kg	2.20E-001	3.95E-001	1.40E-001		mg/kg	1.40E-001	Max	Site-Wide			
Lead	mg/kg	8.42E+001	1.42E+002	3.61E+002	J	mg/kg	1.42E+002	95 UCL	Site-Wide			
Manganese	mg/kg	8.85E+002	4.55E+003	2.52E+003		mg/kg	2.52E+003	Max	Site-Wide			
Mercury	mg/kg	6.19E-001	NA	3.85E+000	J	mg/kg	3.85E+000	Max	Site-Wide			
Nickel	mg/kg	6.73E+000	7.72E+000	1.19E+001		mg/kg	7.72E+000	95 UCL	Site-Wide			
Pyrene	mg/kg	2.41E-001	3.39E-001	1.20E-001		mg/kg	1.20E-001	Max	Site-Wide			
Selenium	mg/kg	3.31E-001	4.59E-001	5.00E-001	J	mg/kg	4.59E-001	95 UCL	Site-Wide			

TABLE 2-9-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Surface Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Silver	mg/kg	2.11E-001	3.19E-001	2.90E-001	J	mg/kg	2.90E-001	Max	Site-Wide			
Tetrachloroethene	mg/kg	1.53E-001	8.99E-001	1.60E+000		mg/kg	8.99E-001	95 UCL	Site-Wide			
Toluene	mg/kg	6.26E-002	1.78E-001	4.80E-001		mg/kg	1.78E-001	95 UCL	Site-Wide			
Trichloroethene	mg/kg	4.55E-002	1.44E-001	2.20E-001		mg/kg	1.44E-001	95 UCL	Site-Wide			
Vanadium	mg/kg	1.03E+001	1.18E+001	1.78E+001		mg/kg	1.18E+001	95 UCL	Site-Wide			
Xylenes (total)	mg/kg	1.69E+000	1.53E+001	2.30E+001		mg/kg	1.53E+001	95 UCL	Site-Wide			
Zinc	mg/kg	8.07E+001	9.77E+001	1.82E+002	J	mg/kg	9.77E+001	95 UCL	Site-Wide			

NA - Not Applicable, 95 th UCL not calculated for samples sets less than 10

TABLE 2-9-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	1.5E+003	7.1E+008	2.1E+004	J	mg/kg	2.1E+004	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	6.6E+000	3.3E+001	4.0E+000		mg/kg	4.0E+000	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	2.5E+002	7.8E+007	1.2E-002		mg/kg	1.2E-002	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	6.8E+000	4.3E+001	1.2E+001		mg/kg	1.2E+001	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	2.4E+001	4.0E+002	3.0E+002		mg/kg	3.0E+002	Max	Site-Wide			
2-Methylphenol	mg/kg	6.9E+000	4.2E+001	9.2E+000		mg/kg	9.2E+000	Max	Site-Wide			
3,3'-Dichlorobenzidine	mg/kg	1.3E+001	1.4E+002	2.1E-001		mg/kg	2.1E-001	Max	Site-Wide			
4,4'-DDD	mg/kg	3.6E+000	6.6E+002	3.6E+000	P	mg/kg	3.6E+000	Max	Site-Wide			
4,4'-DDE	mg/kg	3.4E+000	3.8E+002	1.6E-002	JP	mg/kg	1.6E-002	Max	Site-Wide			
4-Methyl-2-pentanone	mg/kg	3.7E+002	1.1E+008	1.5E+003	J	mg/kg	1.5E+003	Max	Site-Wide			
4-Methylphenol	mg/kg	7.1E+000	4.8E+001	1.7E+001		mg/kg	1.7E+001	Max	Site-Wide			
Acenaphthene	mg/kg	2.8E+001	2.6E+002	1.1E+001		mg/kg	1.1E+001	Max	Site-Wide			
Aluminum	mg/kg	9.2E+003	1.3E+004	2.5E+004	J	mg/kg	1.3E+004	95 UCL	Site-Wide			
Anthracene	mg/kg	6.4E+000	4.6E+001	4.7E-001	J	mg/kg	4.7E-001	Max	Site-Wide			
Antimony	mg/kg	3.5E+000	1.6E+001	4.7E+001	J	mg/kg	1.6E+001	95 UCL	Site-Wide			
Aroclor-1242	mg/kg	2.8E+001	2.2E+003	4.0E+002	J	mg/kg	4.0E+002	Max	Site-Wide			
Aroclor-1248	mg/kg	1.9E+001	3.2E+003	7.0E+001		mg/kg	7.0E+001	Max	Site-Wide			
Aroclor-1254	mg/kg	3.3E+001	3.4E+003	1.0E+002	J	mg/kg	1.0E+002	Max	Site-Wide			
Aroclor-1260	mg/kg	2.6E+001	1.0E+003	1.7E+000		mg/kg	1.7E+000	Max	Site-Wide			
Arsenic	mg/kg	2.4E+000	2.8E+000	3.7E+000		mg/kg	2.8E+000	95 UCL	Site-Wide			
Barium	mg/kg	2.0E+002	3.9E+002	1.6E+003		mg/kg	3.9E+002	95 UCL	Site-Wide			
Benzene	mg/kg	2.8E+002	7.6E+005	7.1E+003	J	mg/kg	7.1E+003	Max	Site-Wide			
Benzo(a)anthracene	mg/kg	6.9E+000	6.3E+001	5.9E-002		mg/kg	5.9E-002	Max	Site-Wide			

TABLE 2-9-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Benzo(a)pyrene	mg/kg	5.1E+000	1.4E+001	1.8E-001	J	mg/kg	1.8E-001	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	5.1E+000	1.4E+001	1.8E-001	J	mg/kg	1.8E-001	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	5.1E+000	1.4E+001	1.8E-001	J	mg/kg	1.8E-001	Max	Site-Wide			
Beryllium	mg/kg	1.6E+000	5.1E+000	5.8E+000		mg/kg	5.1E+000	95 UCL	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	1.9E+002	7.5E+003	2.6E+003		mg/kg	2.6E+003	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	7.2E+001	2.4E+003	9.6E+002		mg/kg	9.6E+002	Max	Site-Wide			
Cadmium	mg/kg	7.7E+000	1.3E+001	1.2E+002		mg/kg	1.3E+001	95 UCL	Site-Wide			
Carbon Disulfide	mg/kg	2.2E+002	4.3E+007	2.0E-003		mg/kg	2.0E-003	Max	Site-Wide			
Carbon Tetrachloride	mg/kg	3.0E+002	7.1E+006	3.6E+003	J	mg/kg	3.6E+003	Max	Site-Wide			
Chlorobenzene	mg/kg	1.6E+002	3.8E+005	1.8E+001		mg/kg	1.8E+001	Max	Site-Wide			
Chloroform	mg/kg	1.9E+002	5.0E+006	1.0E+003	J	mg/kg	1.0E+003	Max	Site-Wide			
Chromium (total)	mg/kg	1.1E+002	1.8E+002	1.4E+003	J	mg/kg	1.8E+002	95 UCL	Site-Wide			
Chrysene	mg/kg	5.1E+000	1.5E+001	7.4E-002		mg/kg	7.4E-002	Max	Site-Wide			
cis-1,2-Dichloroethene	mg/kg	1.2E+002	9.6E+009	1.2E+003		mg/kg	1.2E+003	Max	Site-Wide			
Cobalt	mg/kg	6.3E+000	9.3E+000	4.2E+001		mg/kg	9.3E+000	95 UCL	Site-Wide			
Copper	mg/kg	4.8E+001	9.0E+001	3.6E+002	J	mg/kg	9.0E+001	95 UCL	Site-Wide			
Cyanide (total)	mg/kg	4.7E+000	8.7E+000	7.1E+001		mg/kg	8.7E+000	95 UCL	Site-Wide			
Di-n-butylphthalate	mg/kg	4.0E+001	3.3E+002	6.9E+002		mg/kg	3.3E+002	95 UCL	Site-Wide			
Di-n-octylphthalate	mg/kg	6.6E+000	5.6E+001	2.4E+001		mg/kg	2.4E+001	Max	Site-Wide			
Dibenzofuran	mg/kg	6.5E+000	3.2E+001	4.2E+000		mg/kg	4.2E+000	Max	Site-Wide			
Dieldrin	mg/kg	3.4E+000	2.6E+002	2.4E-001	JP	mg/kg	2.4E-001	Max	Site-Wide			
Diethylphthalate	mg/kg	8.0E+000	4.4E+001	1.0E+002		mg/kg	4.4E+001	95 UCL	Site-Wide			
Dimethylphthalate	mg/kg	2.1E+001	9.6E+001	3.2E+002		mg/kg	9.6E+001	95 UCL	Site-Wide			

TABLE 2-9-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Endrin	mg/kg	3.5E+000	4.6E+002	1.6E+000	JP	mg/kg	1.6E+000	Max	Site-Wide			
Ethyl Benzene	mg/kg	5.3E+002	1.0E+011	6.7E+003	J	mg/kg	6.7E+003	Max	Site-Wide			
Fluoranthene	mg/kg	6.0E+000	2.3E+001	3.8E+000		mg/kg	3.8E+000	Max	Site-Wide			
Fluorene	mg/kg	6.5E+000	2.8E+001	1.4E+001		mg/kg	1.4E+001	Max	Site-Wide			
gamma-Chlordane	mg/kg	1.7E+001	1.6E+005	1.2E+000	P	mg/kg	1.2E+000	Max	Site-Wide			
Hexachlorobenzene	mg/kg	5.1E+000	1.4E+001	5.9E-001		mg/kg	5.9E-001	Max	Site-Wide			
Hexachlorobutadiene	mg/kg	3.6E+000	1.1E+001	2.2E+001		mg/kg	1.1E+001	95 UCL	Site-Wide			
Indeno(1,2,3-cd)pyrene	mg/kg	5.1E+000	1.3E+001	1.8E-001	J	mg/kg	1.8E-001	Max	Site-Wide			
Iron	mg/kg	6.1E+003	7.4E+003	1.5E+004	J	mg/kg	7.4E+003	95 UCL	Site-Wide			
Isophorone	mg/kg	1.2E+002	6.6E+002	2.6E+003		mg/kg	6.6E+002	95 UCL	Site-Wide			
Lead	mg/kg	5.0E+002	1.2E+003	6.3E+003	J	mg/kg	1.2E+003	95 UCL	Site-Wide			
m,p-xylene	mg/kg	1.0E+003	NA	5.5E+003		mg/kg	5.5E+003	Max	Site-Wide			
Manganese	mg/kg	6.6E+002	2.3E+003	2.5E+003		mg/kg	2.3E+003	95 UCL	Site-Wide			
Mercury	mg/kg	2.1E+000	2.7E+001	4.3E+002		mg/kg	2.7E+001	95 UCL	Site-Wide			
Methylene Chloride	mg/kg	3.5E+002	8.5E+007	7.5E+002		mg/kg	7.5E+002	Max	Site-Wide			
Naphthalene	mg/kg	4.6E+001	5.6E+002	2.0E+001		mg/kg	2.0E+001	Max	Site-Wide			
Nickel	mg/kg	7.9E+000	1.0E+001	1.1E+003		mg/kg	1.0E+001	95 UCL	Site-Wide			
ortho-xylene	mg/kg	2.1E+002	NA	6.1E+001		mg/kg	6.1E+001	Max	Site-Wide			
Pentachlorophenol	mg/kg	9.5E+000	2.6E+001	1.7E+002		mg/kg	2.6E+001	95 UCL	Site-Wide			
Phenol	mg/kg	1.1E+001	4.5E+001	5.9E+000		mg/kg	5.9E+000	Max	Site-Wide			
Pyrene	mg/kg	6.1E+000	2.4E+001	2.8E+000		mg/kg	2.8E+000	Max	Site-Wide			
Selenium	mg/kg	4.7E-001	6.3E-001	1.8E+000	B	mg/kg	6.3E-001	95 UCL	Site-Wide			
Silver	mg/kg	5.5E-001	1.3E+000	9.0E+001	J	mg/kg	1.3E+000	95 UCL	Site-Wide			

TABLE 2-9-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Styrene	mg/kg	1.6E+002	1.1E+006	5.9E+003	J	mg/kg	5.9E+003	Max	Site-Wide			
Tetrachloroethene	mg/kg	5.0E+002	2.1E+009	2.0E+005	J	mg/kg	2.0E+005	Max	Site-Wide			
Toluene	mg/kg	1.2E+004	4.0E+015	1.1E+003		mg/kg	1.1E+003	Max	Site-Wide			
Trichloroethene	mg/kg	2.3E+002	6.2E+007	1.8E+001		mg/kg	1.8E+001	Max	Site-Wide			
Vanadium	mg/kg	9.8E+000	1.2E+001	2.5E+004	J	mg/kg	1.2E+001	95 UCL	Site-Wide			
Xylenes (total)	mg/kg	2.5E+003	1.5E+015	2.3E+003	J	mg/kg	2.3E+003	Max	Site-Wide			
Zinc	mg/kg	2.6E+002	4.4E+002	2.1E+004		mg/kg	4.4E+002	95 UCL	Site-Wide			

NA - 95 th UCL not calculated for data sets less than 10

TABLE 2-9-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	6.0E+002	4.2E+005	2.1E+004	J	mg/kg	2.1E+004	Max	Site-Wide			
1,1,2,2-Tetrachloroethane	mg/kg	2.0E+003	9.5E+004	3.9E+000		mg/kg	3.9E+000	Max	Site-Wide			
1,1,2-Trichloroethane	mg/kg	6.7E+001	3.7E+003	8.1E+000		mg/kg	8.1E+000	Max	Site-Wide			
1,1-Dichloroethane	mg/kg	8.1E+001	9.3E+003	2.2E+001	J	mg/kg	2.2E+001	Max	Site-Wide			
1,2,4-Trichlorobenzene	mg/kg	3.8E+000	6.1E+000	4.3E+000		mg/kg	4.3E+000	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	7.0E+000	2.8E+001	5.3E+001		mg/kg	2.8E+001	95 UCL	Site-Wide			
1,2-Dichloroethane	mg/kg	6.8E+001	4.8E+003	4.0E+001		mg/kg	4.0E+001	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	8.5E+001	1.4E+004	2.4E+002	J	mg/kg	2.4E+002	Max	Site-Wide			
1,2-Dichloropropane	mg/kg	6.8E+001	5.8E+003	2.2E+001	J	mg/kg	2.2E+001	Max	Site-Wide			
1,3-Dichlorobenzene	mg/kg	4.7E+000	1.0E+001	8.8E-001	J	mg/kg	8.8E-001	Max	Site-Wide			
1,4-Dichlorobenzene	mg/kg	3.9E+000	6.5E+000	5.2E+000		mg/kg	5.2E+000	Max	Site-Wide			
2,4-Dichlorophenol	mg/kg	4.6E+000	1.0E+001	4.1E+000		mg/kg	4.1E+000	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	4.8E+000	1.3E+001	1.2E+001		mg/kg	1.2E+001	Max	Site-Wide			
2-Butanone	mg/kg	1.5E+002	1.7E+004	5.3E+002	J	mg/kg	5.3E+002	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	3.3E+001	4.5E+002	3.2E+002		mg/kg	3.2E+002	Max	Site-Wide			
2-Methylphenol	mg/kg	4.6E+000	1.2E+001	1.5E+001		mg/kg	1.2E+001	95 UCL	Site-Wide			
4,4'-DDT	mg/kg	2.0E+000	6.9E+000	1.2E+001		mg/kg	6.9E+000	95 UCL	Site-Wide			
4-Methyl-2-pentanone	mg/kg	1.7E+002	8.3E+004	1.5E+003	J	mg/kg	1.5E+003	Max	Site-Wide			
4-Methylphenol	mg/kg	5.8E+000	1.8E+001	4.3E+001		mg/kg	1.8E+001	95 UCL	Site-Wide			
Acenaphthene	mg/kg	1.9E+001	4.3E+001	1.1E+001		mg/kg	1.1E+001	Max	Site-Wide			
Acetone	mg/kg	1.5E+002	1.5E+004	6.5E+002		mg/kg	6.5E+002	Max	Site-Wide			
Aluminum	mg/kg	6.2E+003	8.2E+003	2.5E+004	J	mg/kg	8.2E+003	95 UCL	Site-Wide			

TABLE 2-9-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Anthracene	mg/kg	4.6E+000	1.1E+001	1.1E+000		mg/kg	1.1E+000	Max	Site-Wide			
Antimony	mg/kg	3.1E+000	8.3E+000	4.7E+001		mg/kg	8.3E+000	95 UCL	Site-Wide			
Aroclor-1242	mg/kg	1.4E+001	5.2E+001	4.0E+002	J	mg/kg	5.2E+001	95 UCL	Site-Wide			
Aroclor-1248	mg/kg	1.1E+001	7.3E+001	7.6E+001		mg/kg	7.3E+001	95 UCL	Site-Wide			
Aroclor-1254	mg/kg	1.8E+001	1.2E+002	1.0E+002	J	mg/kg	1.0E+002	Max	Site-Wide			
Aroclor-1260	mg/kg	1.4E+001	2.7E+001	2.2E+001		mg/kg	2.2E+001	Max	Site-Wide			
Arsenic	mg/kg	2.8E+000	3.5E+000	2.1E+001		mg/kg	3.5E+000	95 UCL	Site-Wide			
Barium	mg/kg	1.2E+002	1.6E+002	1.6E+003		mg/kg	1.6E+002	95 UCL	Site-Wide			
Benzene	mg/kg	1.1E+002	6.6E+003	7.1E+003	J	mg/kg	6.6E+003	95 UCL	Site-Wide			
Benzo(a)anthracene	mg/kg	4.8E+000	1.3E+001	1.7E-001		mg/kg	1.7E-001	Max	Site-Wide			
Benzo(a)pyrene	mg/kg	3.9E+000	7.1E+000	1.8E-001	J	mg/kg	1.8E-001	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	3.9E+000	6.8E+000	3.9E-001		mg/kg	3.9E-001	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	3.9E+000	6.7E+000	3.9E-001		mg/kg	3.9E-001	Max	Site-Wide			
Benzoic Acid	mg/kg	3.3E+001	4.3E+002	1.3E+001	J	mg/kg	1.3E+001	Max	Site-Wide			
Beryllium	mg/kg	9.1E-001	1.6E+000	5.8E+000		mg/kg	1.6E+000	95 UCL	Site-Wide			
bis(2-Chloroethyl) ether	mg/kg	5.1E+000	1.0E+001	6.4E+001		mg/kg	1.0E+001	95 UCL	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	1.6E+002	7.3E+003	2.6E+003		mg/kg	2.6E+003	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	5.0E+001	4.8E+002	9.6E+002		mg/kg	4.8E+002	95 UCL	Site-Wide			
Cadmium	mg/kg	4.6E+000	1.4E+001	1.2E+002		mg/kg	1.4E+001	95 UCL	Site-Wide			
Chlorobenzene	mg/kg	6.8E+001	4.4E+003	1.0E+001		mg/kg	1.0E+001	Max	Site-Wide			
Chloroform	mg/kg	1.3E+002	6.1E+004	2.1E+003	J	mg/kg	2.1E+003	Max	Site-Wide			
Chromium (total)	mg/kg	6.9E+001	8.9E+001	1.4E+003	J	mg/kg	8.9E+001	95 UCL	Site-Wide			

TABLE 2-9-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chrysene	mg/kg	3.9E+000	7.0E+000	2.6E-001		mg/kg	2.6E-001	Max	Site-Wide			
cis-1,2-Dichloroethene	mg/kg	8.1E+001	1.4E+006	1.2E+003		mg/kg	1.2E+003	Max	Site-Wide			
Cobalt	mg/kg	6.1E+000	7.3E+000	4.2E+001		mg/kg	7.3E+000	95 UCL	Site-Wide			
Copper	mg/kg	3.3E+001	5.3E+001	3.6E+002	J	mg/kg	5.3E+001	95 UCL	Site-Wide			
Cyanide (total)	mg/kg	3.3E+000	3.7E+000	7.1E+001		mg/kg	3.7E+000	95 UCL	Site-Wide			
Di-n-butylphthalate	mg/kg	4.1E+001	2.5E+002	6.9E+002		mg/kg	2.5E+002	95 UCL	Site-Wide			
Di-n-octylphthalate	mg/kg	4.3E+000	9.8E+000	2.4E+001		mg/kg	9.8E+000	95 UCL	Site-Wide			
Dibenzofuran	mg/kg	4.6E+000	9.7E+000	4.2E+000		mg/kg	4.2E+000	Max	Site-Wide			
Diethylphthalate	mg/kg	6.8E+000	2.4E+001	1.0E+002		mg/kg	2.4E+001	95 UCL	Site-Wide			
Dimethylphthalate	mg/kg	2.1E+001	6.0E+001	3.2E+002		mg/kg	6.0E+001	95 UCL	Site-Wide			
Ethyl Benzene	mg/kg	3.1E+002	1.2E+007	6.7E+003	J	mg/kg	6.7E+003	Max	Site-Wide			
Fluoranthene	mg/kg	4.3E+000	8.2E+000	3.8E+000		mg/kg	3.8E+000	Max	Site-Wide			
Fluorene	mg/kg	4.6E+000	9.5E+000	1.4E+001	J	mg/kg	9.5E+000	95 UCL	Site-Wide			
Hexachlorobenzene	mg/kg	3.9E+000	6.8E+000	5.9E-001		mg/kg	5.9E-001	Max	Site-Wide			
Hexachlorobutadiene	mg/kg	3.5E+000	8.0E+000	2.2E+001		mg/kg	8.0E+000	95 UCL	Site-Wide			
Iron	mg/kg	5.4E+003	6.7E+003	1.5E+004	J	mg/kg	6.7E+003	95 UCL	Site-Wide			
Isophorone	mg/kg	8.7E+001	3.0E+002	2.6E+003		mg/kg	3.0E+002	95 UCL	Site-Wide			
Lead	mg/kg	2.9E+002	6.0E+002	6.3E+003	J	mg/kg	6.0E+002	95 UCL	Site-Wide			
m,p-xylene	mg/kg	8.8E+002	5.1E+009	5.5E+003		mg/kg	5.5E+003	Max	Site-Wide			
Manganese	mg/kg	4.2E+002	1.1E+003	2.5E+003		mg/kg	1.1E+003	95 UCL	Site-Wide			
Mercury	mg/kg	1.1E+000	3.0E+000	1.2E+001	J	mg/kg	3.0E+000	95 UCL	Site-Wide			
Methylene Chloride	mg/kg	1.5E+002	1.7E+004	5.7E+002		mg/kg	5.7E+002	Max	Site-Wide			

TABLE 2-9-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 1
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A1C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Naphthalene	mg/kg	5.6E+001	4.6E+002	8.5E+002		mg/kg	4.6E+002	95 UCL	Site-Wide			
Nickel	mg/kg	6.9E+000	7.9E+000	2.0E+001		mg/kg	7.9E+000	95 UCL	Site-Wide			
ortho-xylene	mg/kg	1.8E+002	9.0E+007	1.1E+003		mg/kg	1.1E+003	Max	Site-Wide			
Pentachlorophenol	mg/kg	1.1E+001	2.0E+001	6.1E+001		mg/kg	2.0E+001	95 UCL	Site-Wide			
Phenol	mg/kg	8.1E+000	1.9E+001	1.7E+002		mg/kg	1.9E+001	95 UCL	Site-Wide			
Pyrene	mg/kg	4.4E+000	8.7E+000	5.9E+000		mg/kg	5.9E+000	Max	Site-Wide			
Selenium	mg/kg	3.9E-001	4.3E-001	2.8E+000		mg/kg	4.3E-001	95 UCL	Site-Wide			
Silver	mg/kg	6.5E-001	1.7E+000	1.8E+000	B	mg/kg	1.7E+000	95 UCL	Site-Wide			
Styrene	mg/kg	6.9E+001	9.1E+003	9.0E+001	J	mg/kg	9.0E+001	Max	Site-Wide			
Tetrachloroethene	mg/kg	3.6E+002	5.0E+006	8.3E+003		mg/kg	8.3E+003	Max	Site-Wide			
Toluene	mg/kg	4.2E+003	5.7E+008	2.0E+005	J	mg/kg	2.0E+005	Max	Site-Wide			
Trichloroethene	mg/kg	1.6E+002	2.8E+005	2.8E+003		mg/kg	2.8E+003	Max	Site-Wide			
Vanadium	mg/kg	9.7E+000	1.2E+001	2.1E+001	J	mg/kg	1.2E+001	95 UCL	Site-Wide			
Xylenes (total)	mg/kg	1.4E+003	1.2E+009	2.5E+004	J	mg/kg	2.5E+004	Max	Site-Wide			
Zinc	mg/kg	1.6E+002	2.3E+002	2.3E+003	J	mg/kg	2.3E+002	95 UCL	Site-Wide			

TABLE 2-9-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A2c.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	3.11E+003	NA	3.30E+004		mg/kg	3.30E+004	Max	Site-Wide			
1,1-Dichloroethene	mg/kg	8.97E+002	NA	8.60E-003		mg/kg	8.60E-003	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	3.78E+001	NA	2.10E+002		mg/kg	2.10E+002	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	2.04E+001	NA	8.80E+001		mg/kg	8.80E+001	Max	Site-Wide			
2-Butanone	mg/kg	9.23E+003	NA	6.40E+004		mg/kg	6.40E+004	Max	Site-Wide			
2-Hexanone	mg/kg	1.89E+003	NA	9.10E+001		mg/kg	9.10E+001	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	1.81E+001	NA	5.80E+001		mg/kg	5.80E+001	Max	Site-Wide			
2-Methylphenol	mg/kg	2.50E+001	NA	1.20E+002		mg/kg	1.20E+002	Max	Site-Wide			
4-Methyl-2-pentanone	mg/kg	2.35E+003	NA	6.50E+003		mg/kg	6.50E+003	Max	Site-Wide			
4-Methylphenol	mg/kg	3.35E+001	NA	1.80E+002		mg/kg	1.80E+002	Max	Site-Wide			
Acetone	mg/kg	3.00E+004	NA	2.50E+005		mg/kg	2.50E+005	Max	Site-Wide			
Aluminum	mg/kg	4.49E+003	NA	8.23E+003		mg/kg	8.23E+003	Max	Site-Wide			
Antimony	mg/kg	3.18E+001	NA	1.64E+002		mg/kg	1.64E+002	Max	Site-Wide			
Aroclor-1248	mg/kg	5.34E+001	NA	3.30E+002		mg/kg	3.30E+002	Max	Site-Wide			
Aroclor-1254	mg/kg	8.97E+000	NA	4.70E+000		mg/kg	4.70E+000	Max	Site-Wide			
Aroclor-1260	mg/kg	1.78E+001	NA	6.20E+001		mg/kg	6.20E+001	Max	Site-Wide			
Arsenic	mg/kg	4.49E+000	NA	7.78E+000		mg/kg	7.78E+000	Max	Site-Wide			
Barium	mg/kg	7.87E+002	NA	2.69E+003		mg/kg	2.69E+003	Max	Site-Wide			
Benzene	mg/kg	7.77E+003	NA	8.90E+004		mg/kg	8.90E+004	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	5.89E+001	NA	2.40E+002		mg/kg	2.40E+002	Max	Site-Wide			
Cadmium	mg/kg	2.33E+001	NA	1.06E+002		mg/kg	1.06E+002	Max	Site-Wide			
Chloroform	mg/kg	2.94E+003	NA	3.10E+004		mg/kg	3.10E+004	Max	Site-Wide			
Chromium (total)	mg/kg	4.25E+002	NA	1.48E+003		mg/kg	1.48E+003	Max	Site-Wide			

TABLE 2-9-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A2c.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
cis-1,2-Dichloroethene	mg/kg	8.97E+002	NA	1.40E-001		mg/kg	1.40E-001	Max	Site-Wide			
Cobalt	mg/kg	1.04E+001	NA	3.29E+001		mg/kg	3.29E+001	Max	Site-Wide			
Copper	mg/kg	5.53E+002	NA	1.32E+003		mg/kg	1.32E+003	Max	Site-Wide			
Di-n-butylphthalate	mg/kg	2.65E+001	NA	8.40E+001		mg/kg	8.40E+001	Max	Site-Wide			
Dimethylphthalate	mg/kg	2.38E+001	NA	1.10E+002		mg/kg	1.10E+002	Max	Site-Wide			
Ethyl Benzene	mg/kg	1.73E+003	NA	7.80E+003		mg/kg	7.80E+003	Max	Site-Wide			
Iron	mg/kg	1.02E+004	NA	1.92E+004		mg/kg	1.92E+004	Max	Site-Wide			
Isophorone	mg/kg	3.98E+001	NA	2.10E+002		mg/kg	2.10E+002	Max	Site-Wide			
Lead	mg/kg	2.57E+003	NA	1.02E+004		mg/kg	1.02E+004	Max	Site-Wide			
m,p-xylene	mg/kg	3.20E-002	NA	3.20E-002		mg/kg	3.20E-002	Max	Site-Wide			
Manganese	mg/kg	2.05E+002	NA	4.02E+002		mg/kg	4.02E+002	Max	Site-Wide			
Mercury	mg/kg	1.60E+000	NA	7.85E+000		mg/kg	7.85E+000	Max	Site-Wide			
Methylene Chloride	mg/kg	1.73E+003	NA	2.00E-002		mg/kg	2.00E-002	Max	Site-Wide			
Naphthalene	mg/kg	3.06E+001	NA	1.40E+002		mg/kg	1.40E+002	Max	Site-Wide			
Nickel	mg/kg	1.99E+001	NA	5.33E+001		mg/kg	5.33E+001	Max	Site-Wide			
ortho-xylene	mg/kg	1.20E-002	NA	1.20E-002		mg/kg	1.20E-002	Max	Site-Wide			
Phenol	mg/kg	3.21E+001	NA	1.70E+002		mg/kg	1.70E+002	Max	Site-Wide			
Selenium	mg/kg	2.02E+000	NA	8.32E+000		mg/kg	8.32E+000	Max	Site-Wide			
Silver	mg/kg	5.94E+000	NA	3.49E+001		mg/kg	3.49E+001	Max	Site-Wide			
Tetrachloroethene	mg/kg	4.50E+003	NA	4.70E+004		mg/kg	4.70E+004	Max	Site-Wide			
Toluene	mg/kg	2.50E+004	NA	2.60E+005		mg/kg	2.60E+005	Max	Site-Wide			
Trichloroethene	mg/kg	9.36E+002	NA	3.50E+002		mg/kg	3.50E+002	Max	Site-Wide			
Vanadium	mg/kg	8.01E+000	NA	1.22E+001		mg/kg	1.22E+001	Max	Site-Wide			

TABLE 2-9-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A2c.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Xylenes (total)	mg/kg	3.13E+004	NA	2.80E+005		mg/kg	2.80E+005	Max	Site-Wide			
Zinc	mg/kg	2.49E+003	NA	8.29E+003		mg/kg	8.29E+003	Max	Site-Wide			

NA - Not calculated per USEPA's comments

Table 2-9-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPLSite

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	8.20E+000	NA	6.5E+001		mg/kg	6.5E+001	Max	Site-Wide			
1,1,2,2-Tetrachloroethane	mg/kg	4.26E+000	NA	3.6E-002		mg/kg	3.6E-002	Max	Site-Wide			
1,1-Dichloroethane	mg/kg	7.86E+000	NA	1.3E+001		mg/kg	1.3E+001	Max	Site-Wide			
1,2,4-Trichlorobenzene	mg/kg	6.07E+000	NA	1.0E+001		mg/kg	1.0E+001	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	2.62E+001	NA	2.1E+002		mg/kg	2.1E+002	Max	Site-Wide			
1,2-Dichloroethane	mg/kg	4.19E+000	NA	1.8E+001		mg/kg	1.8E+001	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	8.60E+000	NA	3.4E+001		mg/kg	3.4E+001	Max	Site-Wide			
1,2-Dichloropropane	mg/kg	4.18E+000	NA	2.7E+000		mg/kg	2.7E+000	Max	Site-Wide			
1,4-Dichlorobenzene	mg/kg	6.57E+000	NA	9.1E-001		mg/kg	9.1E-001	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	2.06E+001	NA	8.8E+001		mg/kg	8.8E+001	Max	Site-Wide			
2,6-Dinitrotoluene	mg/kg	3.37E+001	NA	3.5E+000		mg/kg	3.5E+000	Max	Site-Wide			
2-Butanone	mg/kg	2.21E+002	NA	4.5E+003		mg/kg	4.5E+003	Max	Site-Wide			
2-Hexanone	mg/kg	1.95E+001	NA	9.1E+001		mg/kg	9.1E+001	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	6.04E+001	NA	5.2E+002		mg/kg	5.2E+002	Max	Site-Wide			
2-Methylphenol	mg/kg	2.20E+001	NA	1.2E+002		mg/kg	1.2E+002	Max	Site-Wide			
4,4'-DDD	mg/kg	9.62E-001	NA	3.3E+000		mg/kg	3.3E+000	Max	Site-Wide			
4,4'-DDE	mg/kg	6.01E-001	NA	8.8E-001		mg/kg	8.8E-001	Max	Site-Wide			
4,4'-DDT	mg/kg	6.29E-001	NA	1.7E+000		mg/kg	1.7E+000	Max	Site-Wide			
4-Methyl-2-pentanone	mg/kg	4.85E+001	NA	3.6E+002		mg/kg	3.6E+002	Max	Site-Wide			
4-Methylphenol	mg/kg	2.96E+001	NA	1.8E+002		mg/kg	1.8E+002	Max	Site-Wide			
Acenaphthene	mg/kg	2.62E+001	NA	1.5E+001		mg/kg	1.5E+001	Max	Site-Wide			
Acetone	mg/kg	8.26E+001	NA	1.2E+003		mg/kg	1.2E+003	Max	Site-Wide			
Aldrin	mg/kg	7.93E-001	NA	7.7E+000		mg/kg	7.7E+000	Max	Site-Wide			
alpha-BHC	mg/kg	3.93E-001	NA	3.3E-001		mg/kg	3.3E-001	Max	Site-Wide			

Table 2-9-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPLSite

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	4.24E+003	NA	8.2E+003		mg/kg	8.2E+003	Max	Site-Wide			
Anthracene	mg/kg	1.16E+001	NA	1.3E+000		mg/kg	1.3E+000	Max	Site-Wide			
Antimony	mg/kg	2.79E+001	NA	1.6E+002		mg/kg	1.6E+002	Max	Site-Wide			
Aroclor-1248	mg/kg	2.50E+001	NA	3.3E+002		mg/kg	3.3E+002	Max	Site-Wide			
Aroclor-1254	mg/kg	2.43E+001	NA	3.6E+001		mg/kg	3.6E+001	Max	Site-Wide			
Aroclor-1260	mg/kg	1.39E+002	NA	3.4E+003		mg/kg	3.4E+003	Max	Site-Wide			
Arsenic	mg/kg	3.81E+000	NA	7.8E+000		mg/kg	7.8E+000	Max	Site-Wide			
Barium	mg/kg	5.10E+002	NA	2.7E+003		mg/kg	2.7E+003	Max	Site-Wide			
Benzene	mg/kg	8.75E+000	NA	9.6E+001		mg/kg	9.6E+001	Max	Site-Wide			
Benzo(a)anthracene	mg/kg	1.17E+001	NA	2.7E+000		mg/kg	2.7E+000	Max	Site-Wide			
Benzo(a)pyrene	mg/kg	6.63E+000	NA	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	6.79E+000	NA	5.3E+000		mg/kg	5.3E+000	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	6.79E+000	NA	5.3E+000		mg/kg	5.3E+000	Max	Site-Wide			
Benzoic Acid	mg/kg	8.05E+001	NA	2.4E+002		mg/kg	2.4E+002	Max	Site-Wide			
Benzyl Alcohol	mg/kg	1.88E+001	NA	3.4E+001		mg/kg	3.4E+001	Max	Site-Wide			
Beryllium	mg/kg	2.56E-001	NA	3.4E-001		mg/kg	3.4E-001	Max	Site-Wide			
beta-BHC	mg/kg	4.24E-001	NA	8.0E-001		mg/kg	8.0E-001	Max	Site-Wide			
bis(2-Chloroethyl) ether	mg/kg	1.13E+001	NA	1.1E+002		mg/kg	1.1E+002	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	1.84E+002	NA	2.3E+003		mg/kg	2.3E+003	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	7.19E+001	NA	4.2E+002		mg/kg	4.2E+002	Max	Site-Wide			
Cadmium	mg/kg	2.20E+001	NA	5.1E+004		mg/kg	5.1E+004	Max	Site-Wide			
Chloroform	mg/kg	9.97E+000	NA	1.4E+002		mg/kg	1.4E+002	Max	Site-Wide			
Chromium (total)	mg/kg	2.76E+002	NA	1.5E+003		mg/kg	1.5E+003	Max	Site-Wide			
Chrysene	mg/kg	6.12E+000	NA	3.8E+000		mg/kg	3.8E+000	Max	Site-Wide			

Table 2-9-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPLSite

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
cis-1,2-Dichloroethene	mg/kg	3.11E+000	NA	2.3E-001		mg/kg	2.3E-001	Max	Site-Wide			
Cobalt	mg/kg	8.88E+000	NA	3.3E+001		mg/kg	3.3E+001	Max	Site-Wide			
Copper	mg/kg	3.68E+002	NA	1.3E+003		mg/kg	1.3E+003	Max	Site-Wide			
Di-n-butylphthalate	mg/kg	4.47E+001	NA	3.9E+002		mg/kg	3.9E+002	Max	Site-Wide			
Di-n-octylphthalate	mg/kg	1.15E+001	NA	1.3E+001		mg/kg	1.3E+001	Max	Site-Wide			
Dibenzofuran	mg/kg	1.16E+001	NA	2.5E+000		mg/kg	2.5E+000	Max	Site-Wide			
Diethylphthalate	mg/kg	1.60E+001	NA	6.4E+001		mg/kg	6.4E+001	Max	Site-Wide			
Dimethylphthalate	mg/kg	3.65E+001	NA	2.6E+002		mg/kg	2.6E+002	Max	Site-Wide			
Ethyl Benzene	mg/kg	9.39E+001	NA	6.8E+002		mg/kg	6.8E+002	Max	Site-Wide			
Fluoranthene	mg/kg	1.08E+001	NA	4.1E+000		mg/kg	4.1E+000	Max	Site-Wide			
Fluorene	mg/kg	1.24E+001	NA	1.8E+001		mg/kg	1.8E+001	Max	Site-Wide			
Hexachlorobutadiene	mg/kg	8.95E+000	NA	9.3E-001		mg/kg	9.3E-001	Max	Site-Wide			
Indeno(1,2,3-cd)pyrene	mg/kg	6.62E+000	NA	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide			
Iron	mg/kg	9.36E+003	NA	1.9E+004		mg/kg	1.9E+004	Max	Site-Wide			
Isophorone	mg/kg	1.09E+002	NA	1.8E+003		mg/kg	1.8E+003	Max	Site-Wide			
Lead	mg/kg	1.66E+003	NA	1.0E+004		mg/kg	1.0E+004	Max	Site-Wide			
m,p-xylene	mg/kg	4.06E-001	NA	4.9E+000		mg/kg	4.9E+000	Max	Site-Wide			
Manganese	mg/kg	1.70E+002	NA	4.0E+002		mg/kg	4.0E+002	Max	Site-Wide			
Mercury	mg/kg	1.13E+000	NA	7.9E+000		mg/kg	7.9E+000	Max	Site-Wide			
Methylene Chloride	mg/kg	9.38E+000	NA	6.8E+001		mg/kg	6.8E+001	Max	Site-Wide			
Naphthalene	mg/kg	5.96E+001	NA	4.9E+002		mg/kg	4.9E+002	Max	Site-Wide			
Nickel	mg/kg	1.91E+001	NA	5.5E+001		mg/kg	5.5E+001	Max	Site-Wide			
ortho-xylene	mg/kg	2.03E-001	NA	2.5E+000		mg/kg	2.5E+000	Max	Site-Wide			
Pentachlorophenol	mg/kg	3.12E+001	NA	6.3E+001		mg/kg	6.3E+001	Max	Site-Wide			

Table 2-9-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPLSite

Scenario Timeframe:	Current/Future
Medium:	Soil, Area 2
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A2C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Phenol	mg/kg	3.08E+001	NA	1.7E+002		mg/kg	1.7E+002	Max	Site-Wide			
Pyrene	mg/kg	1.12E+001	NA	8.0E+000		mg/kg	8.0E+000	Max	Site-Wide			
Selenium	mg/kg	1.37E+000	NA	8.3E+000		mg/kg	8.3E+000	Max	Site-Wide			
Silver	mg/kg	4.24E+000	NA	3.5E+001		mg/kg	3.5E+001	Max	Site-Wide			
Styrene	mg/kg	6.05E+000	NA	5.2E+001		mg/kg	5.2E+001	Max	Site-Wide			
Tetrachloroethene	mg/kg	7.12E+001	NA	8.8E+002		mg/kg	8.8E+002	Max	Site-Wide			
Thallium	mg/kg	7.02E-001	NA	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide			
Toluene	mg/kg	4.34E+002	NA	1.3E+003		mg/kg	1.3E+003	Max	Site-Wide			
Trichloroethene	mg/kg	3.10E+001	NA	3.5E+002		mg/kg	3.5E+002	Max	Site-Wide			
Vanadium	mg/kg	7.79E+000	NA	1.2E+001		mg/kg	1.2E+001	Max	Site-Wide			
Vinyl Chloride	mg/kg	8.38E+000	NA	1.1E-001		mg/kg	1.1E-001	Max	Site-Wide			
Xylenes (total)	mg/kg	8.75E+002	NA	3.6E+003		mg/kg	3.6E+003	Max	Site-Wide			
Zinc	mg/kg	1.65E+003	NA	8.3E+003		mg/kg	8.3E+003	Max	Site-Wide			

NA - Not calculated per EPA's comments

TABLE 2-9-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service Site: Area 3

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	6.1E-002	NA	9.0E-003		mg/kg	9.0E-003	Max	Site-Wide			
1,1-Dichloroethane	mg/kg	9.9E-002	NA	8.6E-002		mg/kg	8.6E-002	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	4.6E-001	NA	5.9E-001		mg/kg	5.9E-001	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	3.8E+000	NA	7.6E+000		mg/kg	7.6E+000	Max	Site-Wide			
1,2-Dichloropropane	mg/kg	6.6E-002	NA	1.9E-002		mg/kg	1.9E-002	Max	Site-Wide			
2,4,5-Trichlorophenol	mg/kg	4.9E+000	NA	1.7E-001		mg/kg	1.7E-001	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	3.1E+000	NA	4.9E+000		mg/kg	4.9E+000	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	1.1E+001	NA	1.7E+001		mg/kg	1.7E+001	Max	Site-Wide			
2-Methylphenol	mg/kg	2.5E+000	NA	4.7E+000		mg/kg	4.7E+000	Max	Site-Wide			
4,4'-DDD	mg/kg	2.1E-001	NA	1.5E-001		mg/kg	1.5E-001	Max	Site-Wide			
4-Methylphenol	mg/kg	2.5E+000	NA	4.6E+000		mg/kg	4.6E+000	Max	Site-Wide			
Acenaphthene	mg/kg	5.0E+000	NA	3.6E-001		mg/kg	3.6E-001	Max	Site-Wide			
Acetone	mg/kg	1.8E-001	NA	1.3E-001		mg/kg	1.3E-001	Max	Site-Wide			
Aluminum	mg/kg	7.1E+003	NA	9.5E+003		mg/kg	9.5E+003	Max	Site-Wide			
Anthracene	mg/kg	1.3E+000	NA	6.6E-001		mg/kg	6.6E-001	Max	Site-Wide			

TABLE 2-9-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service Site: Area 3

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Antimony	mg/kg	5.2E+001	NA	6.8E+001	J	mg/kg	6.8E+001	Max	Site-Wide			
Aroclor-1242	mg/kg	6.4E+000	NA	4.2E+001		mg/kg	4.2E+001	Max	Site-Wide			
Aroclor-1248	mg/kg	3.6E+000	NA	2.7E+001		mg/kg	2.7E+001	Max	Site-Wide			
Aroclor-1254	mg/kg	5.6E+000	NA	2.2E+001		mg/kg	2.2E+001	Max	Site-Wide			
Arsenic	mg/kg	1.8E+001	NA	3.1E+001		mg/kg	3.1E+001	Max	Site-Wide			
Barium	mg/kg	2.1E+003	NA	2.5E+003		mg/kg	2.5E+003	Max	Site-Wide			
Benzene	mg/kg	1.8E+000	NA	3.2E+000		mg/kg	3.2E+000	Max	Site-Wide			
Benzo(a)anthracene	mg/kg	2.2E+000	NA	2.4E+000		mg/kg	2.4E+000	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	1.2E+000	NA	4.3E-001		mg/kg	4.3E-001	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	1.2E+000	NA	4.3E-001		mg/kg	4.3E-001	Max	Site-Wide			
Beryllium	mg/kg	8.3E-001	NA	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	3.6E+002	NA	4.3E+002		mg/kg	4.3E+002	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	1.0E+001	NA	1.7E+001		mg/kg	1.7E+001	Max	Site-Wide			
Cadmium	mg/kg	1.4E+002	NA	1.6E+002	J	mg/kg	1.6E+002	Max	Site-Wide			
Chlorobenzene	mg/kg	3.1E+000	NA	6.2E+000		mg/kg	6.2E+000	Max	Site-Wide			

TABLE 2-9-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service Site: Area 3

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chloroform	mg/kg	6.1E-002	NA	1.0E-002		mg/kg	1.0E-002	Max	Site-Wide			
Chromium (total)	mg/kg	1.1E+003	NA	1.3E+003		mg/kg	1.3E+003	Max	Site-Wide			
Chrysene	mg/kg	1.8E+000	NA	1.3E+000		mg/kg	1.3E+000	Max	Site-Wide			
Cobalt	mg/kg	5.0E+001	NA	5.7E+001		mg/kg	5.7E+001	Max	Site-Wide			
Copper	mg/kg	7.8E+002	NA	1.2E+003	J	mg/kg	1.2E+003	Max	Site-Wide			
Cyanide (total)	mg/kg	3.4E+001	NA	4.8E+001		mg/kg	4.8E+001	Max	Site-Wide			
Di-n-butylphthalate	mg/kg	1.3E+001	NA	1.5E+001		mg/kg	1.5E+001	Max	Site-Wide			
Di-n-octylphthalate	mg/kg	8.2E-001	NA	1.3E+000		mg/kg	1.3E+000	Max	Site-Wide			
Dibenzofuran	mg/kg	1.2E+000	NA	4.3E-001		mg/kg	4.3E-001	Max	Site-Wide			
Diethylphthalate	mg/kg	1.1E+000	NA	1.5E-001		mg/kg	1.5E-001	Max	Site-Wide			
Dimethylphthalate	mg/kg	8.7E-001	NA	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide			
Ethyl Benzene	mg/kg	7.4E+001	NA	1.4E+002		mg/kg	1.4E+002	Max	Site-Wide			
Fluoranthene	mg/kg	2.7E+000	NA	3.4E+000		mg/kg	3.4E+000	Max	Site-Wide			
Fluorene	mg/kg	5.4E-001	NA	6.1E-001		mg/kg	6.1E-001	Max	Site-Wide			
Heptachlor	mg/kg	1.1E-001	NA	8.8E-002		mg/kg	8.8E-002	Max	Site-Wide			

TABLE 2-9-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service Site: Area 3

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Heptachlor epoxide	mg/kg	1.1E-001	NA	4.2E-002		mg/kg	4.2E-002	Max	Site-Wide			
Iron	mg/kg	1.1E+004	NA	1.3E+004	J	mg/kg	1.3E+004	Max	Site-Wide			
Isophorone	mg/kg	2.4E+001	NA	4.0E+001		mg/kg	4.0E+001	Max	Site-Wide			
Lead	mg/kg	8.3E+003	NA	1.1E+004	J	mg/kg	1.1E+004	Max	Site-Wide			
Manganese	mg/kg	8.4E+002	NA	1.5E+003	J	mg/kg	1.5E+003	Max	Site-Wide			
Mercury	mg/kg	9.4E+000	NA	9.5E+000	J	mg/kg	9.5E+000	Max	Site-Wide			
Methylene Chloride	mg/kg	8.3E-001	NA	2.0E-001		mg/kg	2.0E-001	Max	Site-Wide			
N-Nitrosodiphenylamine	mg/kg	2.3E+000	NA	4.3E+000		mg/kg	4.3E+000	Max	Site-Wide			
Naphthalene	mg/kg	1.9E+001	NA	2.8E+001		mg/kg	2.8E+001	Max	Site-Wide			
Nickel	mg/kg	3.8E+001	NA	5.3E+001		mg/kg	5.3E+001	Max	Site-Wide			
Pentachlorophenol	mg/kg	5.6E+000	NA	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
Phenol	mg/kg	3.6E+000	NA	6.4E+000		mg/kg	6.4E+000	Max	Site-Wide			
Pyrene	mg/kg	2.1E+000	NA	2.3E+000		mg/kg	2.3E+000	Max	Site-Wide			
Selenium	mg/kg	1.3E+001	NA	1.7E+001		mg/kg	1.7E+001	Max	Site-Wide			
Styrene	mg/kg	1.2E+001	NA	2.3E+001		mg/kg	2.3E+001	Max	Site-Wide			

TABLE 2-9-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service Site: Area 3

Scenario Timeframe:	Current
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Tetrachloroethene	mg/kg	1.3E+002	NA	2.5E+002		mg/kg	2.5E+002	Max	Site-Wide			
Toluene	mg/kg	3.3E+002	NA	6.4E+002		mg/kg	6.4E+002	Max	Site-Wide			
Trichloroethene	mg/kg	5.0E+001	NA	1.0E+002		mg/kg	1.0E+002	Max	Site-Wide			
Vanadium	mg/kg	1.9E+001	NA	2.6E+001	J	mg/kg	2.6E+001	Max	Site-Wide			
Xylenes (total)	mg/kg	3.1E+002	NA	5.7E+002		mg/kg	5.7E+002	Max	Site-Wide			
Zinc	mg/kg	9.4E+003	NA	1.5E+004		mg/kg	1.5E+004	Max	Site-Wide			

NA- Not calculated per EPA's comment

TABLE 2-9-7

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	3.3E+001	NC	9.0E-003		mg/kg	9.0E-003	Max	Site-Wide			
1,1-Dichloroethane	mg/kg	3.7E+001	NC	1.5E-001		mg/kg	1.5E-001	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	6.3E+000	NC	5.9E-001		mg/kg	5.9E-001	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	4.8E+001	NC	7.6E+000		mg/kg	7.6E+000	Max	Site-Wide			
1,2-Dichloropropane	mg/kg	3.3E+001	NC	1.9E-002		mg/kg	1.9E-002	Max	Site-Wide			
2,4,5-Trichlorophenol	mg/kg	1.6E+001	NC	1.7E-001		mg/kg	1.7E-001	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	7.0E+000	NC	4.9E+000		mg/kg	4.9E+000	Max	Site-Wide			
2-Butanone	mg/kg	8.7E+001	NC	2.4E+002		mg/kg	2.4E+002	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	1.7E+001	NC	5.6E+001		mg/kg	5.6E+001	Max	Site-Wide			
2-Methylphenol	mg/kg	6.9E+000	NC	4.7E+000		mg/kg	4.7E+000	Max	Site-Wide			
4,4'-DDD	mg/kg	4.0E-001	NC	1.5E-001		mg/kg	1.5E-001	Max	Site-Wide			
4-Methyl-2-pentanone	mg/kg	1.5E+002	NC	5.0E+002		mg/kg	5.0E+002	Max	Site-Wide			
4-Methylphenol	mg/kg	6.8E+000	NC	4.6E+000		mg/kg	4.6E+000	Max	Site-Wide			
Acenaphthene	mg/kg	1.6E+001	NC	3.6E-001		mg/kg	3.6E-001	Max	Site-Wide			
Acetone	mg/kg	1.4E+002	NC	9.7E-001		mg/kg	9.7E-001	Max	Site-Wide			
Aluminum	mg/kg	6.1E+003	NC	1.3E+004		mg/kg	1.3E+004	Max	Site-Wide			
Anthracene	mg/kg	6.5E+000	NC	6.6E-001		mg/kg	6.6E-001	Max	Site-Wide			
Antimony	mg/kg	3.5E+001	NC	8.5E+001		mg/kg	8.5E+001	Max	Site-Wide			
Aroclor-1242	mg/kg	2.0E+001	NC	2.8E+002		mg/kg	2.8E+002	Max	Site-Wide			
Aroclor-1248	mg/kg	1.3E+001	NC	1.3E+002		mg/kg	1.3E+002	Max	Site-Wide			

TABLE 2-9-7

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aroclor-1254	mg/kg	6.3E+000	NC	2.2E+001		mg/kg	2.2E+001	Max	Site-Wide			
Aroclor-1260	mg/kg	5.4E+000	NC	3.6E+001		mg/kg	3.6E+001	Max	Site-Wide			
Arsenic	mg/kg	7.5E+000	NC	3.1E+001		mg/kg	3.1E+001	Max	Site-Wide			
Barium	mg/kg	1.6E+003	NC	5.7E+003		mg/kg	5.7E+003	Max	Site-Wide			
Benzene	mg/kg	3.3E+001	NC	3.2E+000		mg/kg	3.2E+000	Max	Site-Wide			
Benzo(a)anthracene	mg/kg	6.8E+000	NC	2.4E+000		mg/kg	2.4E+000	Max	Site-Wide			
Benzo(a)pyrene	mg/kg	6.0E+000	NC	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	6.3E+000	NC	3.9E+000		mg/kg	3.9E+000	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	6.3E+000	NC	3.9E+000		mg/kg	3.9E+000	Max	Site-Wide			
Beryllium	mg/kg	4.3E-001	NC	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	2.2E+002	NC	5.4E+002		mg/kg	5.4E+002	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	1.8E+001	NC	5.1E+001		mg/kg	5.1E+001	Max	Site-Wide			
Cadmium	mg/kg	7.4E+001	NC	1.7E+002		mg/kg	1.7E+002	Max	Site-Wide			
Chlorobenzene	mg/kg	3.3E+001	NC	6.2E+000		mg/kg	6.2E+000	Max	Site-Wide			
Chloroform	mg/kg	3.3E+001	NC	1.0E-002		mg/kg	1.0E-002	Max	Site-Wide			
Chromium (total)	mg/kg	8.7E+002	NC	3.1E+003		mg/kg	3.1E+003	Max	Site-Wide			
Chrysene	mg/kg	6.1E+000	NC	1.3E+000		mg/kg	1.3E+000	Max	Site-Wide			
Cobalt	mg/kg	4.0E+001	NC	1.5E+002		mg/kg	1.5E+002	Max	Site-Wide			
Copper	mg/kg	9.4E+002	NC	4.5E+003		mg/kg	4.5E+003	Max	Site-Wide			
Cyanide (total)	mg/kg	3.5E+001	NC	6.6E+001		mg/kg	6.6E+001	Max	Site-Wide			

TABLE 2-9-7

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Di-n-butylphthalate	mg/kg	2.9E+001	NC	9.4E+001		mg/kg	9.4E+001	Max	Site-Wide			
Di-n-octylphthalate	mg/kg	1.0E+001	NC	3.8E+001		mg/kg	3.8E+001	Max	Site-Wide			
Dibenzo(a,h)anthracene	mg/kg	5.9E+000	NC	2.7E-001		mg/kg	2.7E-001	Max	Site-Wide			
Dibenzofuran	mg/kg	6.5E+000	NC	4.3E-001		mg/kg	4.3E-001	Max	Site-Wide			
Diethylphthalate	mg/kg	4.5E+000	NC	5.0E+000		mg/kg	5.0E+000	Max	Site-Wide			
Dimethylphthalate	mg/kg	6.4E+000	NC	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide			
Ethyl Benzene	mg/kg	7.5E+002	NC	4.3E+003		mg/kg	4.3E+003	Max	Site-Wide			
Fluoranthene	mg/kg	7.0E+000	NC	3.4E+000		mg/kg	3.4E+000	Max	Site-Wide			
Fluorene	mg/kg	6.3E+000	NC	6.2E-001		mg/kg	6.2E-001	Max	Site-Wide			
Heptachlor	mg/kg	2.0E-001	NC	8.8E-002		mg/kg	8.8E-002	Max	Site-Wide			
Heptachlor epoxide	mg/kg	2.0E-001	NC	4.2E-002		mg/kg	4.2E-002	Max	Site-Wide			
Indeno(1,2,3-cd)pyrene	mg/kg	5.9E+000	NC	6.2E-001		mg/kg	6.2E-001	Max	Site-Wide			
Iron	mg/kg	1.7E+004	NC	7.0E+004		mg/kg	7.0E+004	Max	Site-Wide			
Isophorone	mg/kg	4.3E+001	NC	1.9E+002		mg/kg	1.9E+002	Max	Site-Wide			
Lead	mg/kg	5.2E+003	NC	1.6E+004		mg/kg	1.6E+004	Max	Site-Wide			
Manganese	mg/kg	5.0E+002	NC	1.5E+003		mg/kg	1.5E+003	Max	Site-Wide			
Mercury	mg/kg	5.9E+000	NC	9.5E+000		mg/kg	9.5E+000	Max	Site-Wide			
Methylene Chloride	mg/kg	4.2E+001	NC	2.0E-001		mg/kg	2.0E-001	Max	Site-Wide			
N-Nitrosodiphenylamine	mg/kg	6.4E+000	NC	4.3E+000		mg/kg	4.3E+000	Max	Site-Wide			
Naphthalene	mg/kg	2.7E+001	NC	9.7E+001		mg/kg	9.7E+001	Max	Site-Wide			

TABLE 2-9-7

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 4 feet)

File: CN0-4A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nickel	mg/kg	4.6E+001	NC	2.0E+002		mg/kg	2.0E+002	Max	Site-Wide			
ortho-xylene	mg/kg	2.3E-002	NC	2.3E-002		mg/kg	2.3E-002	Max	Site-Wide			
Pentachlorophenol	mg/kg	2.8E+001	NC	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
Phenol	mg/kg	8.5E+000	NC	2.8E+001		mg/kg	2.8E+001	Max	Site-Wide			
Pyrene	mg/kg	6.9E+000	NC	2.3E+000		mg/kg	2.3E+000	Max	Site-Wide			
Selenium	mg/kg	5.7E+000	NC	1.7E+001		mg/kg	1.7E+001	Max	Site-Wide			
Silver	mg/kg	6.5E+000	NC	2.5E+001		mg/kg	2.5E+001	Max	Site-Wide			
Styrene	mg/kg	3.6E+001	NC	2.3E+001		mg/kg	2.3E+001	Max	Site-Wide			
Tetrachloroethene	mg/kg	1.9E+002	NC	7.9E+002		mg/kg	7.9E+002	Max	Site-Wide			
Toluene	mg/kg	3.1E+003	NC	1.9E+004		mg/kg	1.9E+004	Max	Site-Wide			
Trichloroethene	mg/kg	4.3E+001	NC	1.7E+002		mg/kg	1.7E+002	Max	Site-Wide			
Vanadium	mg/kg	1.7E+001	NC	4.8E+001		mg/kg	4.8E+001	Max	Site-Wide			
Xylenes (total)	mg/kg	4.9E+003	NC	2.3E+004		mg/kg	2.3E+004	Max	Site-Wide			
Zinc	mg/kg	5.2E+003	NC	1.6E+004		mg/kg	1.6E+004	Max	Site-Wide			

NC-Not calculated per USEPA's comments

TABLE 2-9-8

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/kg	2.6E+002	NA	7.6E+003		mg/kg	7.6E+003	Max	Site-Wide			
1,1-Dichloroethane	mg/kg	1.1E+002	NA	1.7E+000		mg/kg	1.7E+000	Max	Site-Wide			
1,2-Dichlorobenzene	mg/kg	6.3E+000	NA	5.9E-001		mg/kg	5.9E-001	Max	Site-Wide			
1,2-Dichloroethane	mg/kg	8.8E+001	NA	8.1E-001		mg/kg	8.1E-001	Max	Site-Wide			
1,2-Dichloroethene (total)	mg/kg	1.2E+002	NA	2.6E+001		mg/kg	2.6E+001	Max	Site-Wide			
1,2-Dichloropropane	mg/kg	8.8E+001	NA	5.5E-001		mg/kg	5.5E-001	Max	Site-Wide			
1,4-Dichlorobenzene	mg/kg	4.9E+000	NA	9.3E-002		mg/kg	9.3E-002	Max	Site-Wide			
2,4,5-Trichlorophenol	mg/kg	2.4E+001	NA	1.7E-001		mg/kg	1.7E-001	Max	Site-Wide			
2,4-Dimethylphenol	mg/kg	9.0E+000	NA	6.2E+001		mg/kg	6.2E+001	Max	Site-Wide			
2,4-Dinitrotoluene	mg/kg	4.9E+000	NA	8.4E-001		mg/kg	8.4E-001	Max	Site-Wide			
2-Butanone	mg/kg	3.3E+003	NA	9.9E+004		mg/kg	9.9E+004	Max	Site-Wide			
2-Hexanone	mg/kg	2.1E+002	NA	3.9E-001		mg/kg	3.9E-001	Max	Site-Wide			
2-Methylnaphthalene	mg/kg	2.6E+001	NA	2.1E+002		mg/kg	2.1E+002	Max	Site-Wide			
2-Methylphenol	mg/kg	6.1E+000	NA	2.1E+001		mg/kg	2.1E+001	Max	Site-Wide			
4,4'-DDD	mg/kg	2.6E-001	NA	1.5E-001		mg/kg	1.5E-001	Max	Site-Wide			
4-Methyl-2-pentanone	mg/kg	2.0E+003	NA	6.1E+004		mg/kg	6.1E+004	Max	Site-Wide			
4-Methylphenol	mg/kg	5.4E+000	NA	2.2E+001		mg/kg	2.2E+001	Max	Site-Wide			
4-Nitrophenol	mg/kg	1.3E+001	NA	6.6E-002		mg/kg	6.6E-002	Max	Site-Wide			
Acenaphthene	mg/kg	2.4E+001	NA	7.1E-001		mg/kg	7.1E-001	Max	Site-Wide			
Acetone	mg/kg	1.1E+003	NA	3.4E+004		mg/kg	3.4E+004	Max	Site-Wide			
Aluminum	mg/kg	6.6E+003	NA	1.8E+004		mg/kg	1.8E+004	Max	Site-Wide			
Anthracene	mg/kg	6.5E+000	NA	1.2E+000		mg/kg	1.2E+000	Max	Site-Wide			
Antimony	mg/kg	4.1E+001	NA	1.5E+002		mg/kg	1.5E+002	Max	Site-Wide			

TABLE 2-9-8

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aroclor-1242	mg/kg	1.1E+001	NA	2.8E+002		mg/kg	2.8E+002	Max	Site-Wide			
Aroclor-1248	mg/kg	6.6E+000	NA	1.3E+002		mg/kg	1.3E+002	Max	Site-Wide			
Aroclor-1254	mg/kg	6.1E+000	NA	4.4E+001		mg/kg	4.4E+001	Max	Site-Wide			
Aroclor-1260	mg/kg	3.3E+000	NA	3.6E+001		mg/kg	3.6E+001	Max	Site-Wide			
Arsenic	mg/kg	5.1E+000	NA	3.1E+001		mg/kg	3.1E+001	Max	Site-Wide			
Barium	mg/kg	1.4E+003	NA	6.4E+003		mg/kg	6.4E+003	Max	Site-Wide			
Benzene	mg/kg	5.9E+001	NA	1.5E+003		mg/kg	1.5E+003	Max	Site-Wide			
Benzo(a)anthracene	mg/kg	6.6E+000	NA	2.4E+000		mg/kg	2.4E+000	Max	Site-Wide			
Benzo(a)pyrene	mg/kg	5.0E+000	NA	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	5.3E+000	NA	3.9E+000		mg/kg	3.9E+000	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	5.3E+000	NA	3.9E+000		mg/kg	3.9E+000	Max	Site-Wide			
Benzoic Acid	mg/kg	3.3E+001	NA	2.3E+002		mg/kg	2.3E+002	Max	Site-Wide			
Beryllium	mg/kg	3.3E-001	NA	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	6.1E+002	NA	8.9E+003		mg/kg	8.9E+003	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	1.9E+001	NA	6.6E+001		mg/kg	6.6E+001	Max	Site-Wide			
Cadmium	mg/kg	1.6E+002	NA	1.7E+003		mg/kg	1.7E+003	Max	Site-Wide			
Chlorobenzene	mg/kg	4.2E+001	NA	1.0E+003		mg/kg	1.0E+003	Max	Site-Wide			
Chloroform	mg/kg	6.8E+001	NA	1.0E-002		mg/kg	1.0E-002	Max	Site-Wide			
Chromium (total)	mg/kg	7.8E+002	NA	3.8E+003		mg/kg	3.8E+003	Max	Site-Wide			
Chrysene	mg/kg	5.1E+000	NA	1.6E+000		mg/kg	1.6E+000	Max	Site-Wide			
cis-1,2-Dichloroethene	mg/kg	9.6E+000	NA	2.2E-002		mg/kg	2.2E-002	Max	Site-Wide			
Cobalt	mg/kg	2.9E+001	NA	1.5E+002		mg/kg	1.5E+002	Max	Site-Wide			
Copper	mg/kg	9.2E+002	NA	5.8E+003		mg/kg	5.8E+003	Max	Site-Wide			

TABLE 2-9-8

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Cyanide (total)	mg/kg	1.8E+001	NA	6.6E+001		mg/kg	6.6E+001	Max	Site-Wide			
Di-n-butylphthalate	mg/kg	3.8E+001	NA	2.4E+002		mg/kg	2.4E+002	Max	Site-Wide			
Di-n-octylphthalate	mg/kg	8.3E+000	NA	3.6E+001		mg/kg	3.6E+001	Max	Site-Wide			
Dibenzo(a,h)anthracene	mg/kg	4.9E+000	NA	2.7E-001		mg/kg	2.7E-001	Max	Site-Wide			
Dibenzofuran	mg/kg	6.4E+000	NA	6.4E-001		mg/kg	6.4E-001	Max	Site-Wide			
Diethylphthalate	mg/kg	4.9E+000	NA	5.0E+000		mg/kg	5.0E+000	Max	Site-Wide			
Dimethylphthalate	mg/kg	5.7E+000	NA	1.6E+001		mg/kg	1.6E+001	Max	Site-Wide			
Ethyl Benzene	mg/kg	9.7E+002	NA	2.3E+004		mg/kg	2.3E+004	Max	Site-Wide			
Fluoranthene	mg/kg	7.5E+000	NA	6.1E+000		mg/kg	6.1E+000	Max	Site-Wide			
Fluorene	mg/kg	6.4E+000	NA	9.8E-001		mg/kg	9.8E-001	Max	Site-Wide			
Indeno(1,2,3-cd)pyrene	mg/kg	5.0E+000	NA	8.2E-001		mg/kg	8.2E-001	Max	Site-Wide			
Iron	mg/kg	1.3E+004	NA	7.0E+004		mg/kg	7.0E+004	Max	Site-Wide			
Isophorone	mg/kg	2.1E+002	NA	3.6E+003		mg/kg	3.6E+003	Max	Site-Wide			
Lead	mg/kg	4.1E+003	NA	1.7E+004		mg/kg	1.7E+004	Max	Site-Wide			
m,p-xylene	mg/kg	4.8E+001	NA	1.2E+002		mg/kg	1.2E+002	Max	Site-Wide			
Manganese	mg/kg	3.3E+002	NA	1.5E+003		mg/kg	1.5E+003	Max	Site-Wide			
Mercury	mg/kg	5.7E+000	NA	3.6E+001		mg/kg	3.6E+001	Max	Site-Wide			
Methylene Chloride	mg/kg	1.1E+002	NA	2.7E+000		mg/kg	2.7E+000	Max	Site-Wide			
N-Nitrosodiphenylamine	mg/kg	5.2E+000	NA	4.3E+000		mg/kg	4.3E+000	Max	Site-Wide			
Naphthalene	mg/kg	5.4E+001	NA	6.8E+002		mg/kg	6.8E+002	Max	Site-Wide			
Nickel	mg/kg	2.9E+001	NA	2.0E+002		mg/kg	2.0E+002	Max	Site-Wide			
ortho-xylene	mg/kg	1.4E+001	NA	6.7E+001		mg/kg	6.7E+001	Max	Site-Wide			
Pentachlorophenol	mg/kg	2.5E+001	NA	1.6E+001		mg/kg	1.6E+001	Max	Site-Wide			

TABLE 2-9-8

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Soil, Area 3
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 10 feet)

File: CN10A3C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Phenol	mg/kg	6.7E+001	NA	8.6E+002		mg/kg	8.6E+002	Max	Site-Wide			
Pyrene	mg/kg	7.1E+000	NA	4.2E+000		mg/kg	4.2E+000	Max	Site-Wide			
Selenium	mg/kg	1.4E+001	NA	1.6E+002		mg/kg	1.6E+002	Max	Site-Wide			
Silver	mg/kg	3.1E+001	NA	3.1E+002		mg/kg	3.1E+002	Max	Site-Wide			
Styrene	mg/kg	1.1E+002	NA	3.1E+002		mg/kg	3.1E+002	Max	Site-Wide			
Tetrachloroethene	mg/kg	1.5E+003	NA	4.6E+004		mg/kg	4.6E+004	Max	Site-Wide			
Thallium	mg/kg	6.4E-001	NA	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide			
Toluene	mg/kg	5.9E+003	NA	1.3E+005		mg/kg	1.3E+005	Max	Site-Wide			
Trichloroethene	mg/kg	6.3E+002	NA	1.9E+004		mg/kg	1.9E+004	Max	Site-Wide			
Vanadium	mg/kg	1.3E+001	NA	4.8E+001		mg/kg	4.8E+001	Max	Site-Wide			
Xylenes (total)	mg/kg	5.3E+003	NA	1.0E+005		mg/kg	1.0E+005	Max	Site-Wide			
Zinc	mg/kg	3.1E+003	NA	1.6E+004		mg/kg	1.6E+004	Max	Site-Wide			

NA - Not calculated per EPA's comments

TABLE 2-9-9

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemcial Services NPL Site

Scenario Timeframe:	Current
Medium:	Surface Soil, Area 5A
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A5C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
4,4'-DDE	mg/kg	8.9E-003	NA	1.1E-002		mg/kg	1.1E-002	Max	Site-Wide			
4,4'-DDT	mg/kg	1.2E-002	NA	1.4E-002	J	mg/kg	1.4E-002	Max	Site-Wide			
alpha-BHC	mg/kg	1.0E-003	NA	1.1E-003	J	mg/kg	1.1E-003	Max	Site-Wide			
alpha-Chlordane	mg/kg	5.5E-003	NA	1.0E-002		mg/kg	1.0E-002	Max	Site-Wide			
Aluminum	mg/kg	5.1E+003	NA	6.1E+003		mg/kg	6.1E+003	Max	Site-Wide			
Antimony	mg/kg	1.0E+001	NA	1.5E+001	J	mg/kg	1.5E+001	Max	Site-Wide			
Aroclor-1248	mg/kg	8.0E-002	NA	1.4E-001	J	mg/kg	1.4E-001	Max	Site-Wide			
Aroclor-1254	mg/kg	2.9E-001	NA	3.2E-001		mg/kg	3.2E-001	Max	Site-Wide			
Aroclor-1260	mg/kg	2.1E-001	NA	2.3E-001		mg/kg	2.3E-001	Max	Site-Wide			
Arsenic	mg/kg	3.2E+000	NA	3.4E+000		mg/kg	3.4E+000	Max	Site-Wide			
Barium	mg/kg	8.6E+001	NA	1.2E+002		mg/kg	1.2E+002	Max	Site-Wide			
Benzo(a)anthracene	mg/kg	7.2E-002	NA	8.9E-002	J	mg/kg	8.9E-002	Max	Site-Wide			
Benzo(a)pyrene	mg/kg	8.3E-002	NA	1.1E-001	J	mg/kg	1.1E-001	Max	Site-Wide			
Benzo(b)fluoranthene	mg/kg	8.2E-002	NA	1.1E-001	J	mg/kg	1.1E-001	Max	Site-Wide			
Benzo(k)fluoranthene	mg/kg	7.1E-002	NA	8.7E-002	J	mg/kg	8.7E-002	Max	Site-Wide			
Beryllium	mg/kg	3.8E-001	NA	4.8E-001	J	mg/kg	4.8E-001	Max	Site-Wide			
bis(2-Ethylhexyl)phthalate	mg/kg	4.3E-001	NA	6.3E-001		mg/kg	6.3E-001	Max	Site-Wide			
Butylbenzylphthalate	mg/kg	5.5E-002	NA	5.6E-002	J	mg/kg	5.6E-002	Max	Site-Wide			
Cadmium	mg/kg	1.5E+000	NA	1.5E+000	J	mg/kg	1.5E+000	Max	Site-Wide			
Chromium (total)	mg/kg	2.3E+001	NA	2.8E+001		mg/kg	2.8E+001	Max	Site-Wide			

(((

TABLE 2-9-9

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemcial Services NPL Site

Scenario Timeframe:	Current
Medium:	Surface Soil, Area 5A
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A5C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Chrysene	mg/kg	6.8E-002	NA	1.1E-001	J	mg/kg	1.1E-001	Max	Site-Wide			
Cobalt	mg/kg	4.8E+000	NA	5.6E+000		mg/kg	5.6E+000	Max	Site-Wide			
Copper	mg/kg	1.9E+001	NA	2.0E+001		mg/kg	2.0E+001	Max	Site-Wide			
Cyanide (total)	mg/kg	7.3E-002	NA	1.3E-001		mg/kg	1.3E-001	Max	Site-Wide			
Di-n-butylphthalate	mg/kg	9.4E-002	NA	1.2E-001	J	mg/kg	1.2E-001	Max	Site-Wide			
Dieldrin	mg/kg	4.4E-003	NA	5.0E-003	J	mg/kg	5.0E-003	Max	Site-Wide			
Endosulfan I	mg/kg	2.8E-003	NA	3.5E-003		mg/kg	3.5E-003	Max	Site-Wide			
Endrin	mg/kg	5.1E-003	NA	5.5E-003	J	mg/kg	5.5E-003	Max	Site-Wide			
Fluoranthene	mg/kg	1.3E-001	NA	1.5E-001	J	mg/kg	1.5E-001	Max	Site-Wide			
gamma-BHC	mg/kg	7.5E-004	NA	5.0E-004	J	mg/kg	5.0E-004	Max	Site-Wide			
gamma-Chlordane	mg/kg	6.9E-003	NA	8.5E-003		mg/kg	8.5E-003	Max	Site-Wide			
Heptachlor	mg/kg	1.2E-003	NA	1.3E-003		mg/kg	1.3E-003	Max	Site-Wide			
Heptachlor epoxide	mg/kg	4.2E-003	NA	4.6E-003	J	mg/kg	4.6E-003	Max	Site-Wide			
Indeno(1,2,3-cd)pyrene	mg/kg	6.8E-002	NA	8.7E-002	J	mg/kg	8.7E-002	Max	Site-Wide			
Iron	mg/kg	8.4E+003	NA	1.0E+004		mg/kg	1.0E+004	Max	Site-Wide			
Lead	mg/kg	6.5E+001	NA	8.3E+001		mg/kg	8.3E+001	Max	Site-Wide			
Manganese	mg/kg	4.0E+002	NA	4.4E+002		mg/kg	4.4E+002	Max	Site-Wide			
Mercury	mg/kg	4.8E-002	NA	7.0E-002		mg/kg	7.0E-002	Max	Site-Wide			
Methoxychlor	mg/kg	1.6E-002	NA	1.7E-002	J	mg/kg	1.7E-002	Max	Site-Wide			
Methylene Chloride	mg/kg	6.5E-003	NA	7.0E-003	J	mg/kg	7.0E-003	Max	Site-Wide			

TABLE 2-9-9

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemcial Services NPL Site

Scenario Timeframe:	Current
Medium:	Surface Soil, Area 5A
Exposure Medium:	Soil
Exposure Point:	Soil (0 to 2 feet)

File: SS-A5C.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nickel	mg/kg	1.2E+001	NA	1.7E+001	J	mg/kg	1.7E+001	Max	Site-Wide			
Pyrene	mg/kg	1.3E-001	NA	1.6E-001	J	mg/kg	1.6E-001	Max	Site-Wide			
Selenium	mg/kg	5.0E-001	NA	5.7E-001	J	mg/kg	5.7E-001	Max	Site-Wide			
Silver	mg/kg	8.3E-001	NA	1.1E+000		mg/kg	1.1E+000	Max	Site-Wide			
Toluene	mg/kg	3.8E-003	NA	2.0E-003	J	mg/kg	2.0E-003	Max	Site-Wide			
Vanadium	mg/kg	1.1E+001	NA	1.2E+001		mg/kg	1.2E+001	Max	Site-Wide			
Zinc	mg/kg	9.4E+001	NA	1.2E+002		mg/kg	1.2E+002	Max	Site-Wide			

NA - Not Applicable, 95 th UCL not caluclated because sample set let than 10

(((

TABLE 2-10-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 1
Exposure Medium:	Sediment
Exposure Point:	Fire pond, puddle

File: SDA1EX.123

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/kg	3.4E+003	NA	4.9E+003		mg/kg	4.9E+003	Max	Site-Wide	4.9E+003	Max	Site-Wide
Aroclor-1248	mg/kg	2.3E+000	NA	4.6E+000		mg/kg	4.6E+000	Max	Site-Wide	4.6E+000	Max	Site-Wide
Aroclor-1254	mg/kg	8.8E+000	NA	1.7E+001		mg/kg	1.7E+001	Max	Site-Wide	1.7E+001	Max	Site-Wide
Arsenic	mg/kg	1.5E+000	NA	1.5E+000		mg/kg	1.5E+000	Max	Site-Wide	1.5E+000	Max	Site-Wide
Barium	mg/kg	4.7E+001	NA	6.9E+001		mg/kg	6.9E+001	Max	Site-Wide	6.9E+001	Max	Site-Wide
Beryllium	mg/kg	2.5E-001	NA	3.2E-001	J	mg/kg	3.2E-001	Max	Site-Wide	3.2E-001	Max	Site-Wide
bis(2-Ethylhexyl)phthalate	mg/kg	6.7E+000	NA	1.3E+001		mg/kg	1.3E+001	Max	Site-Wide	1.3E+001	Max	Site-Wide
Butylbenzylphthalate	mg/kg	1.6E-001	NA	1.6E-001		mg/kg	1.6E-001	Max	Site-Wide	1.6E-001	Max	Site-Wide
Cadmium	mg/kg	6.9E-001	NA	1.3E+000	J	mg/kg	1.3E+000	Max	Site-Wide	1.3E+000	Max	Site-Wide
Chloroform	mg/kg	2.0E-003	NA	2.0E-003		mg/kg	2.0E-003	Max	Site-Wide	2.0E-003	Max	Site-Wide
Chromium (total)	mg/kg	1.4E+001	NA	2.1E+001	J	mg/kg	2.1E+001	Max	Site-Wide	2.1E+001	Max	Site-Wide
Copper	mg/kg	1.5E+001	NA	2.4E+001		mg/kg	2.4E+001	Max	Site-Wide	2.4E+001	Max	Site-Wide
Di-n-butylphthalate	mg/kg	1.7E-001	NA	1.7E-001		mg/kg	1.7E-001	Max	Site-Wide	1.7E-001	Max	Site-Wide
Iron	mg/kg	4.0E+003	NA	4.7E+003		mg/kg	4.7E+003	Max	Site-Wide	4.7E+003	Max	Site-Wide
Lead	mg/kg	1.4E+002	NA	2.8E+002	J	mg/kg	2.8E+002	Max	Site-Wide	2.8E+002	Max	Site-Wide
Manganese	mg/kg	1.5E+002	NA	2.2E+002		mg/kg	2.2E+002	Max	Site-Wide	2.2E+002	Max	Site-Wide
Mercury	mg/kg	3.7E-001	NA	7.1E-001		mg/kg	7.1E-001	Max	Site-Wide	7.1E-001	Max	Site-Wide
Phenol	mg/kg	1.8E-001	NA	1.9E-001		mg/kg	1.9E-001	Max	Site-Wide	1.9E-001	Max	Site-Wide
Toluene	mg/kg	2.8E-003	NA	3.0E-003		mg/kg	3.0E-003	Max	Site-Wide	3.0E-003	Max	Site-Wide
Vanadium	mg/kg	5.4E+000	NA	6.2E+000	J	mg/kg	6.2E+000	Max	Site-Wide	6.2E+000	Max	Site-Wide
Zinc	mg/kg	6.7E+001	NA	1.1E+002		mg/kg	1.1E+002	Max	Site-Wide	1.1E+002	Max	Site-Wide

* The 95UCL is calculated only for data sets of 10 or more data points.

TABLE 2-10-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 2
Exposure Medium:	Sediment
Exposure Point:	Ditch

File: SDA2EX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,4-Dimethylphenol	mg/kg	3.9E-001	NA	6.1E-001		mg/kg	6.1E-001	Max	Site-Wide	6.1E-001	Max	Site-Wide
2-Methylnaphthalene	mg/kg	1.6E-001	NA	1.6E-001		mg/kg	1.6E-001	Max	Site-Wide	1.6E-001	Max	Site-Wide
Aluminum	mg/kg	4.4E+003	NA	4.9E+003		mg/kg	4.9E+003	Max	Site-Wide	4.9E+003	Max	Site-Wide
Anthracene	mg/kg	1.2E-001	NA	8.3E-002		mg/kg	8.3E-002	Max	Site-Wide	8.3E-002	Max	Site-Wide
Arsenic	mg/kg	7.9E+000	NA	1.0E+001		mg/kg	1.0E+001	Max	Site-Wide	1.0E+001	Max	Site-Wide
Barium	mg/kg	6.4E+001	NA	9.1E+001		mg/kg	9.1E+001	Max	Site-Wide	9.1E+001	Max	Site-Wide
Benzene	mg/kg	7.0E+000	NA	1.4E+001	J	mg/kg	1.4E+001	Max	Site-Wide	1.4E+001	Max	Site-Wide
Benzo(a)anthracene	mg/kg	3.9E-001	NA	7.1E-001		mg/kg	7.1E-001	Max	Site-Wide	7.1E-001	Max	Site-Wide
Benzo(a)pyrene	mg/kg	3.8E-001	NA	6.9E-001		mg/kg	6.9E-001	Max	Site-Wide	6.9E-001	Max	Site-Wide
Benzo(b)fluoranthene	mg/kg	3.8E-001	NA	6.0E-001		mg/kg	6.0E-001	Max	Site-Wide	6.0E-001	Max	Site-Wide
Benzo(k)fluoranthene	mg/kg	4.3E-001	NA	6.9E-001		mg/kg	6.9E-001	Max	Site-Wide	6.9E-001	Max	Site-Wide
Beryllium	mg/kg	3.5E-001	NA	4.7E-001	J	mg/kg	4.7E-001	Max	Site-Wide	4.7E-001	Max	Site-Wide
bis(2-Chloroethyl) ether	mg/kg	3.6E-001	NA	5.6E-001	J	mg/kg	5.6E-001	Max	Site-Wide	5.6E-001	Max	Site-Wide
bis(2-Ethylhexyl)phthalate	mg/kg	2.3E+000	NA	4.4E+000		mg/kg	4.4E+000	Max	Site-Wide	4.4E+000	Max	Site-Wide
Butylbenzylphthalate	mg/kg	1.7E-001	NA	1.7E-001		mg/kg	1.7E-001	Max	Site-Wide	1.7E-001	Max	Site-Wide
Cadmium	mg/kg	1.3E+000	NA	2.3E+000	J	mg/kg	2.3E+000	Max	Site-Wide	2.3E+000	Max	Site-Wide
Chloroform	mg/kg	2.8E-003	NA	3.0E-003		mg/kg	3.0E-003	Max	Site-Wide	3.0E-003	Max	Site-Wide
Chromium (total)	mg/kg	1.7E+001	NA	2.9E+001	J	mg/kg	2.9E+001	Max	Site-Wide	2.9E+001	Max	Site-Wide
Chrysene	mg/kg	3.8E-001	NA	6.9E-001		mg/kg	6.9E-001	Max	Site-Wide	6.9E-001	Max	Site-Wide
Copper	mg/kg	2.1E+001	NA	3.7E+001		mg/kg	3.7E+001	Max	Site-Wide	3.7E+001	Max	Site-Wide
Dibenzo(a,h)anthracene	mg/kg	1.6E-001	NA	1.6E-001		mg/kg	1.6E-001	Max	Site-Wide	1.6E-001	Max	Site-Wide
Ethyl Benzene	mg/kg	6.6E-002	NA	1.3E-001		mg/kg	1.3E-001	Max	Site-Wide	1.3E-001	Max	Site-Wide

TABLE 2-10-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 2
Exposure Medium:	Sediment
Exposure Point:	Ditch

File: SDA2EX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Fluoranthene	mg/kg	5.3E-001	NA	1.0E+000		mg/kg	1.0E+000	Max	Site-Wide	1.0E+000	Max	Site-Wide
Indeno(1,2,3-cd)pyrene	mg/kg	2.7E-001	NA	3.8E-001		mg/kg	3.8E-001	Max	Site-Wide	3.8E-001	Max	Site-Wide
Iron	mg/kg	1.3E+004	NA	1.4E+004		mg/kg	1.4E+004	Max	Site-Wide	1.4E+004	Max	Site-Wide
Lead	mg/kg	8.8E+001	NA	1.5E+002	J	mg/kg	1.5E+002	Max	Site-Wide	1.5E+002	Max	Site-Wide
Manganese	mg/kg	2.1E+002	NA	3.7E+002		mg/kg	3.7E+002	Max	Site-Wide	3.7E+002	Max	Site-Wide
Mercury	mg/kg	1.1E-001	NA	1.3E-001		mg/kg	1.3E-001	Max	Site-Wide	1.3E-001	Max	Site-Wide
Naphthalene	mg/kg	1.4E-001	NA	1.1E-001		mg/kg	1.1E-001	Max	Site-Wide	1.1E-001	Max	Site-Wide
Nickel	mg/kg	1.1E+001	NA	1.4E+001		mg/kg	1.4E+001	Max	Site-Wide	1.4E+001	Max	Site-Wide
Pyrene	mg/kg	5.9E-001	NA	1.1E+000		mg/kg	1.1E+000	Max	Site-Wide	1.1E+000	Max	Site-Wide
Toluene	mg/kg	2.9E-002	NA	5.6E-002		mg/kg	5.6E-002	Max	Site-Wide	5.6E-002	Max	Site-Wide
Vanadium	mg/kg	1.0E+001	NA	1.4E+001	J	mg/kg	1.4E+001	Max	Site-Wide	1.4E+001	Max	Site-Wide
Xylenes (total)	mg/kg	1.0E-001	NA	2.0E-001		mg/kg	2.0E-001	Max	Site-Wide	2.0E-001	Max	Site-Wide
Zinc	mg/kg	1.0E+002	NA	1.2E+002		mg/kg	1.2E+002	Max	Site-Wide	1.2E+002	Max	Site-Wide

* The 95UCL is calculated only for data sets of 10 or more data points.

TABLE 2-10-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4a
Exposure Medium:	Sediment
Exposure Point:	Wetland

File: SDA4AEX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency **		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,2'-oxybis(1-Chloropropan	mg/kg	5.9E-001	8.5E-001	1.8E+000	J	mg/kg	8.5E-001	95 UCL	Site-Wide	8.5E-001	95 UCL	Site-Wide
2-Butanone	mg/kg	7.3E-002	4.2E-002	7.4E-002		mg/kg	4.2E-002	95 UCL	Site-Wide	4.2E-002	95 UCL	Site-Wide
2-Methylnaphthalene	mg/kg	4.8E-001	5.9E-001	3.8E-001		mg/kg	3.8E-001	Max	Site-Wide	3.8E-001	Max	Site-Wide
4-Methylphenol	mg/kg	4.6E-001	5.4E-001	1.1E-001		mg/kg	1.1E-001	Max	Site-Wide	1.1E-001	Max	Site-Wide
Acetone	mg/kg	1.2E-001	2.0E-001	2.3E-001		mg/kg	2.0E-001	95 UCL	Site-Wide	2.0E-001	95 UCL	Site-Wide
Aluminum	mg/kg	6.3E+003	NA	1.0E+004		mg/kg	1.0E+004	Max	Site-Wide	1.0E+004	Max	Site-Wide
Anthracene	mg/kg	4.6E-001	5.5E-001	2.7E-001		mg/kg	2.7E-001	Max	Site-Wide	2.7E-001	Max	Site-Wide
Antimony	mg/kg	1.4E+000	NA	2.8E+000	J	mg/kg	2.8E+000	Max	Site-Wide	2.8E+000	Max	Site-Wide
Aroclor-1248	mg/kg	2.8E+000	4.0E+000	9.9E+001		mg/kg	4.0E+000	95 UCL	Site-Wide	4.0E+000	95 UCL	Site-Wide
Aroclor-1254	mg/kg	5.9E+000	9.7E+000	2.0E+002		mg/kg	9.7E+000	95 UCL	Site-Wide	9.7E+000	95 UCL	Site-Wide
Aroclor-1260	mg/kg	2.2E+000	3.4E+000	6.0E+001		mg/kg	3.4E+000	95 UCL	Site-Wide	3.4E+000	95 UCL	Site-Wide
Arsenic	mg/kg	8.1E+000	1.2E+001	2.9E+001		mg/kg	1.2E+001	95 UCL	Site-Wide	1.2E+001	95 UCL	Site-Wide
Barium	mg/kg	4.7E+001	NA	8.0E+001		mg/kg	8.0E+001	Max	Site-Wide	8.0E+001	Max	Site-Wide
Benzene	mg/kg	3.7E-001	1.1E-001	1.1E+001		mg/kg	1.1E-001	95 UCL	Site-Wide	1.1E-001	95 UCL	Site-Wide
Benzo(a)anthracene	mg/kg	4.6E-001	5.6E-001	9.2E-001		mg/kg	5.6E-001	95 UCL	Site-Wide	5.6E-001	95 UCL	Site-Wide
Benzo(a)pyrene	mg/kg	4.7E-001	5.7E-001	1.2E+000		mg/kg	5.7E-001	95 UCL	Site-Wide	5.7E-001	95 UCL	Site-Wide
Benzo(b)fluoranthene	mg/kg	5.3E-001	7.4E-001	1.5E+000	J	mg/kg	7.4E-001	95 UCL	Site-Wide	7.4E-001	95 UCL	Site-Wide
Benzo(k)fluoranthene	mg/kg	5.3E-001	6.9E-001	1.5E+000		mg/kg	6.9E-001	95 UCL	Site-Wide	6.9E-001	95 UCL	Site-Wide
Benzoic Acid	mg/kg	7.5E-001	NA	1.2E+000	J	mg/kg	1.2E+000	Max	Site-Wide	1.2E+000	Max	Site-Wide
Beryllium	mg/kg	4.6E-001	NA	1.0E+000	J	mg/kg	1.0E+000	Max	Site-Wide	1.0E+000	Max	Site-Wide

TABLE 2-10-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4a
Exposure Medium:	Sediment
Exposure Point:	Wetland

File: SDA4AEX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency **		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
bis(2-Chloroethyl) ether	mg/kg	4.7E-001	5.4E-001	4.3E-001		mg/kg	4.3E-001	Max	Site-Wide	4.3E-001	Max	Site-Wide
bis(2-Ethylhexyl)phthalate	mg/kg	7.2E-001	1.1E+000	4.6E+000		mg/kg	1.1E+000	95 UCL	Site-Wide	1.1E+000	95 UCL	Site-Wide
Cadmium	mg/kg	3.3E+000	1.3E+001	1.1E+001		mg/kg	1.1E+001	Max	Site-Wide	1.1E+001	Max	Site-Wide
Chloroethane	mg/kg	7.1E-002	3.4E-002	4.0E-002		mg/kg	3.4E-002	95 UCL	Site-Wide	3.4E-002	95 UCL	Site-Wide
Chloroform	mg/kg	6.9E-002	3.5E-002	2.0E-003		mg/kg	2.0E-003	Max	Site-Wide	2.0E-003	Max	Site-Wide
Chromium (total)	mg/kg	3.6E+001	4.6E+001	2.9E+002		mg/kg	4.6E+001	95 UCL	Site-Wide	4.6E+001	95 UCL	Site-Wide
Chrysene	mg/kg	4.7E-001	6.0E-001	1.1E+000		mg/kg	6.0E-001	95 UCL	Site-Wide	6.0E-001	95 UCL	Site-Wide
Copper	mg/kg	4.3E+001	7.4E+001	3.6E+002		mg/kg	7.4E+001	95 UCL	Site-Wide	7.4E+001	95 UCL	Site-Wide
Di-n-butylphthalate	mg/kg	4.7E-001	5.6E-001	1.0E+000		mg/kg	5.6E-001	95 UCL	Site-Wide	5.6E-001	95 UCL	Site-Wide
Dibenzo(a,h)anthracene	mg/kg	4.8E-001	5.5E-001	3.7E-001		mg/kg	3.7E-001	Max	Site-Wide	3.7E-001	Max	Site-Wide
Fluoranthene	mg/kg	4.6E-001	6.0E-001	8.2E-001		mg/kg	6.0E-001	95 UCL	Site-Wide	6.0E-001	95 UCL	Site-Wide
Indeno(1,2,3-cd)pyrene	mg/kg	4.1E-001	4.9E-001	5.6E-001		mg/kg	4.9E-001	95 UCL	Site-Wide	4.9E-001	95 UCL	Site-Wide
Iron	mg/kg	9.2E+003	1.6E+005	2.1E+004	J	mg/kg	2.1E+004	Max	Site-Wide	9.2E+003	Mean	Site-Wide
Lead	mg/kg	9.6E+001	2.2E+002	7.0E+002		mg/kg	2.2E+002	95 UCL	Site-Wide	2.2E+002	95 UCL	Site-Wide
Manganese	mg/kg	1.4E+002	NA	4.0E+002	J	mg/kg	4.0E+002	Max	Site-Wide	4.0E+002	Max	Site-Wide
Mercury	mg/kg	7.7E-001	1.1E+000	8.9E+000	J	mg/kg	1.1E+000	95 UCL	Site-Wide	1.1E+000	95 UCL	Site-Wide
Methylene Chloride	mg/kg	7.3E-002	3.7E-002	4.4E-002	J	mg/kg	3.7E-002	95 UCL	Site-Wide	3.7E-002	95 UCL	Site-Wide
Naphthalene	mg/kg	4.8E-001	6.0E-001	4.2E-001		mg/kg	4.2E-001	Max	Site-Wide	4.2E-001	Max	Site-Wide
Nickel	mg/kg	1.2E+001	NA	2.7E+001		mg/kg	2.7E+001	Max	Site-Wide	2.7E+001	Max	Site-Wide
Pyrene	mg/kg	4.7E-001	6.0E-001	8.1E-001		mg/kg	6.0E-001	95 UCL	Site-Wide	6.0E-001	95 UCL	Site-Wide

TABLE 2-10-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4a
Exposure Medium:	Sediment
Exposure Point:	Wetland

File: SDA4AEX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency **		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Selenium	mg/kg	5.4E-001	NA	1.1E+000		mg/kg	1.1E+000	Max	Site-Wide	1.1E+000	Max	Site-Wide
Thallium	mg/kg	7.7E-001	NA	1.4E+000		mg/kg	1.4E+000	Max	Site-Wide	1.4E+000	Max	Site-Wide
Toluene	mg/kg	7.3E-002	4.7E-002	1.1E-001		mg/kg	4.7E-002	95 UCL	Site-Wide	4.7E-002	95 UCL	Site-Wide
Vanadium	mg/kg	2.5E+001	NA	4.8E+001	J	mg/kg	4.8E+001	Max	Site-Wide	4.8E+001	Max	Site-Wide
Zinc	mg/kg	1.4E+002	2.7E+002	4.7E+002		mg/kg	2.7E+002	95 UCL	Site-Wide	2.7E+002	95 UCL	Site-Wide

* The 95UCL is calculated only for data sets of 10 or more data points.

** The Central Tendency EPC Value is equal to the Reasonable Maximum Exposure EPC Value (USEPA 1998).

TABLE 2-10-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4B
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA4BEX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,2-Dichloroethene (total)	mg/kg	1.0E-002	NA	1.2E-002		mg/kg	1.2E-002	Max	Site-Wide	1.2E-002	Max	Site-Wide
2-Methylnaphthalene	mg/kg	3.3E-001	NA	3.1E-002	J	mg/kg	3.1E-002	Max	Site-Wide	3.1E-002	Max	Site-Wide
4,4'-DDD	mg/kg	3.3E-002	NA	7.8E-002	J	mg/kg	7.8E-002	Max	Site-Wide	7.8E-002	Max	Site-Wide
4,4'-DDE	mg/kg	6.8E-002	NA	2.9E-001	J	mg/kg	2.9E-001	Max	Site-Wide	2.9E-001	Max	Site-Wide
4,4'-DDT	mg/kg	6.0E-002	NA	2.4E-001	J	mg/kg	2.4E-001	Max	Site-Wide	2.4E-001	Max	Site-Wide
Acetone	mg/kg	1.7E-002	NA	2.5E-002		mg/kg	2.5E-002	Max	Site-Wide	2.5E-002	Max	Site-Wide
alpha-Chlordane	mg/kg	4.7E-002	NA	2.2E-001	J	mg/kg	2.2E-001	Max	Site-Wide	2.2E-001	Max	Site-Wide
Anthracene	mg/kg	2.3E-001	NA	2.6E-001		mg/kg	2.6E-001	Max	Site-Wide	2.6E-001	Max	Site-Wide
Aroclor-1248	mg/kg	2.8E-001	NA	2.2E-001		mg/kg	2.2E-001	Max	Site-Wide	2.2E-001	Max	Site-Wide
Aroclor-1254	mg/kg	2.0E+000	NA	8.8E+000		mg/kg	8.8E+000	Max	Site-Wide	8.8E+000	Max	Site-Wide
Aroclor-1260	mg/kg	5.1E-001	NA	9.7E-001		mg/kg	9.7E-001	Max	Site-Wide	9.7E-001	Max	Site-Wide
Arsenic	mg/kg	5.3E+000	NA	7.6E+000		mg/kg	7.6E+000	Max	Site-Wide	7.6E+000	Max	Site-Wide
Benzo(a)anthracene	mg/kg	2.0E-001	NA	3.6E-001		mg/kg	3.6E-001	Max	Site-Wide	3.6E-001	Max	Site-Wide
Benzo(a)pyrene	mg/kg	2.5E-001	NA	4.0E-001		mg/kg	4.0E-001	Max	Site-Wide	4.0E-001	Max	Site-Wide
Benzo(b)fluoranthene	mg/kg	2.6E-001	NA	4.4E-001		mg/kg	4.4E-001	Max	Site-Wide	4.4E-001	Max	Site-Wide
Benzo(k)fluoranthene	mg/kg	2.9E-001	NA	4.1E-001		mg/kg	4.1E-001	Max	Site-Wide	4.1E-001	Max	Site-Wide
beta-BHC	mg/kg	1.4E-002	NA	2.6E-002	J	mg/kg	2.6E-002	Max	Site-Wide	2.6E-002	Max	Site-Wide
bis(2-Ethylhexyl)phthalate	mg/kg	1.2E+000	NA	4.0E+000		mg/kg	4.0E+000	Max	Site-Wide	4.0E+000	Max	Site-Wide
Cadmium	mg/kg	3.6E+000	NA	5.9E+000		mg/kg	5.9E+000	Max	Site-Wide	5.9E+000	Max	Site-Wide
Carbazole	mg/kg	3.3E-001	NA	3.6E-002	J	mg/kg	3.6E-002	Max	Site-Wide	3.6E-002	Max	Site-Wide
Chromium (total)	mg/kg	2.1E+001	NA	3.3E+001		mg/kg	3.3E+001	Max	Site-Wide	3.3E+001	Max	Site-Wide
Chrysene	mg/kg	2.1E-001	NA	3.9E-001		mg/kg	3.9E-001	Max	Site-Wide	3.9E-001	Max	Site-Wide
Copper	mg/kg	2.3E+001	NA	3.7E+001		mg/kg	3.7E+001	Max	Site-Wide	3.7E+001	Max	Site-Wide

TABLE 2-10-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 4B
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA4BEX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Di-n-butylphthalate	mg/kg	3.3E-001	NA	8.4E-002	J	mg/kg	8.4E-002	Max	Site-Wide	8.4E-002	Max	Site-Wide
Dibenzo(a,h)anthracene	mg/kg	2.4E-001	NA	2.9E-001		mg/kg	2.9E-001	Max	Site-Wide	2.9E-001	Max	Site-Wide
Endosulfan I	mg/kg	7.5E-002	NA	3.9E-001	J	mg/kg	3.9E-001	Max	Site-Wide	3.9E-001	Max	Site-Wide
Endrin	mg/kg	4.5E-002	NA	1.5E-001	J	mg/kg	1.5E-001	Max	Site-Wide	1.5E-001	Max	Site-Wide
Fluoranthene	mg/kg	2.3E-001	NA	4.0E-001		mg/kg	4.0E-001	Max	Site-Wide	4.0E-001	Max	Site-Wide
gamma-BHC	mg/kg	1.5E-002	NA	2.9E-002	J	mg/kg	2.9E-002	Max	Site-Wide	2.9E-002	Max	Site-Wide
gamma-Chlordane	mg/kg	1.8E-002	NA	4.8E-002	J	mg/kg	4.8E-002	Max	Site-Wide	4.8E-002	Max	Site-Wide
Heptachlor	mg/kg	2.0E-002	NA	6.2E-002	J	mg/kg	6.2E-002	Max	Site-Wide	6.2E-002	Max	Site-Wide
Indeno(1,2,3-cd)pyrene	mg/kg	2.0E-001	NA	3.4E-001		mg/kg	3.4E-001	Max	Site-Wide	3.4E-001	Max	Site-Wide
Isophorone	mg/kg	3.2E-001	NA	4.2E-002	J	mg/kg	4.2E-002	Max	Site-Wide	4.2E-002	Max	Site-Wide
Lead	mg/kg	1.1E+002	NA	1.4E+002		mg/kg	1.4E+002	Max	Site-Wide	1.4E+002	Max	Site-Wide
Mercury	mg/kg	2.5E-001	NA	4.5E-001	J	mg/kg	4.5E-001	Max	Site-Wide	4.5E-001	Max	Site-Wide
Methoxychlor	mg/kg	1.5E-001	NA	2.9E-001	J	mg/kg	2.9E-001	Max	Site-Wide	2.9E-001	Max	Site-Wide
Naphthalene	mg/kg	3.3E-001	NA	2.5E-002	J	mg/kg	2.5E-002	Max	Site-Wide	2.5E-002	Max	Site-Wide
Pyrene	mg/kg	2.3E-001	NA	3.9E-001		mg/kg	3.9E-001	Max	Site-Wide	3.9E-001	Max	Site-Wide
Zinc	mg/kg	1.7E+002	NA	3.0E+002		mg/kg	3.0E+002	Max	Site-Wide	3.0E+002	Max	Site-Wide

* The 95UCL is calculated only for data sets of 10 or more data points.

(((

TABLE 2-10-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 6
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA6EX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2-Butanone	mg/kg	7.0E-003	NA	1.1E-002		mg/kg	1.1E-002	Max	Site-Wide	1.1E-002	Max	Site-Wide
4-Methylphenol	mg/kg	2.7E-001	6.6E-001	2.7E-001		mg/kg	2.7E-001	Max	Site-Wide	2.7E-001	Max	Site-Wide
Acenaphthene	mg/kg	4.4E-001	6.9E-001	2.3E-001	J	mg/kg	2.3E-001	Max	Site-Wide	2.3E-001	Max	Site-Wide
Aluminum	mg/kg	1.1E+004	NA	1.6E+004		mg/kg	1.6E+004	Max	Site-Wide	1.6E+004	Max	Site-Wide
Anthracene	mg/kg	2.4E-001	4.2E-001	6.1E-001	J	mg/kg	4.2E-001	95 UCL	Site-Wide	4.2E-001	95 UCL	Site-Wide
Antimony	mg/kg	2.7E+000	NA	5.1E+000	J	mg/kg	5.1E+000	Max	Site-Wide	5.1E+000	Max	Site-Wide
Arsenic	mg/kg	1.2E+001	NA	2.3E+001		mg/kg	2.3E+001	Max	Site-Wide	2.3E+001	Max	Site-Wide
Barium	mg/kg	8.5E+001	NA	1.1E+002		mg/kg	1.1E+002	Max	Site-Wide	1.1E+002	Max	Site-Wide
Benzo(a)anthracene	mg/kg	5.5E-001	1.9E+000	3.2E+000		mg/kg	1.9E+000	95 UCL	Site-Wide	1.9E+000	95 UCL	Site-Wide
Benzo(a)pyrene	mg/kg	6.3E-001	4.0E+000	4.0E+000		mg/kg	4.0E+000	95 UCL	Site-Wide	4.0E+000	95 UCL	Site-Wide
Benzo(b)fluoranthene	mg/kg	7.4E-001	5.9E+000	4.8E+000		mg/kg	4.8E+000	Max	Site-Wide	4.8E+000	Max	Site-Wide
Benzo(k)fluoranthene	mg/kg	5.8E-001	2.4E+000	3.2E+000		mg/kg	2.4E+000	95 UCL	Site-Wide	2.4E+000	95 UCL	Site-Wide
Benzoic Acid	mg/kg	5.8E-001	NA	7.3E-001		mg/kg	7.3E-001	Max	Site-Wide	7.3E-001	Max	Site-Wide
Beryllium	mg/kg	6.8E-001	NA	7.2E-001	J	mg/kg	7.2E-001	Max	Site-Wide	7.2E-001	Max	Site-Wide
bis(2-Ethylhexyl)phthalate	mg/kg	3.4E-001	5.0E-001	8.2E-001		mg/kg	5.0E-001	95 UCL	Site-Wide	5.0E-001	95 UCL	Site-Wide
Cadmium	mg/kg	8.1E-001	NA	9.0E-001	J	mg/kg	9.0E-001	Max	Site-Wide	9.0E-001	Max	Site-Wide
Carbazole	mg/kg	2.8E-001	NA	6.0E-001	J	mg/kg	6.0E-001	Max	Site-Wide	6.0E-001	Max	Site-Wide
Chloroform	mg/kg	4.3E-003	NA	8.0E-003		mg/kg	8.0E-003	Max	Site-Wide	8.0E-003	Max	Site-Wide
Chromium (total)	mg/kg	2.3E+001	NA	3.2E+001		mg/kg	3.2E+001	Max	Site-Wide	3.2E+001	Max	Site-Wide
Chrysene	mg/kg	6.8E-001	3.6E+000	4.4E+000		mg/kg	3.6E+000	95 UCL	Site-Wide	3.6E+000	95 UCL	Site-Wide
Copper	mg/kg	3.3E+001	NA	4.2E+001		mg/kg	4.2E+001	Max	Site-Wide	4.2E+001	Max	Site-Wide
Di-n-butylphthalate	mg/kg	2.1E-001	4.1E-001	6.6E-002	J	mg/kg	6.6E-002	Max	Site-Wide	6.6E-002	Max	Site-Wide
Dibenzo(a,h)anthracene	mg/kg	2.8E-001	6.3E-001	9.3E-001	J	mg/kg	6.3E-001	95 UCL	Site-Wide	6.3E-001	95 UCL	Site-Wide

TABLE 2-10-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Sediment Area 6
Exposure Medium:	Sediment
Exposure Point:	Creek

File: SDA6EX.WK4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Dibenzofuran	mg/kg	2.4E-001	3.2E-001	1.1E-001	J	mg/kg	1.1E-001	Max	Site-Wide	1.1E-001	Max	Site-Wide
Fluoranthene	mg/kg	3.9E-001	NA	1.9E+000		mg/kg	1.9E+000	Max	Site-Wide	1.9E+000	Max	Site-Wide
Fluorene	mg/kg	2.5E-001	3.2E-001	2.3E-001	J	mg/kg	2.3E-001	Max	Site-Wide	2.3E-001	Max	Site-Wide
Heptachlor	mg/kg	1.0E-002	2.2E-002	2.5E-003	J	mg/kg	2.5E-003	Max	Site-Wide	2.5E-003	Max	Site-Wide
Indeno(1,2,3-cd)pyrene	mg/kg	4.7E-001	1.7E+000	2.6E+000		mg/kg	1.7E+000	95 UCL	Site-Wide	1.7E+000	95 UCL	Site-Wide
Iron	mg/kg	2.7E+004	NA	3.5E+004		mg/kg	3.5E+004	Max	Site-Wide	3.5E+004	Max	Site-Wide
Lead	mg/kg	7.1E+001	NA	9.0E+001	J	mg/kg	9.0E+001	Max	Site-Wide	9.0E+001	Max	Site-Wide
Manganese	mg/kg	2.9E+002	NA	4.2E+002		mg/kg	4.2E+002	Max	Site-Wide	4.2E+002	Max	Site-Wide
Naphthalene	mg/kg	2.8E-001	3.7E-001	2.6E-001	J	mg/kg	2.6E-001	Max	Site-Wide	2.6E-001	Max	Site-Wide
Nickel	mg/kg	2.9E+001	NA	4.1E+001		mg/kg	4.1E+001	Max	Site-Wide	4.1E+001	Max	Site-Wide
Pyrene	mg/kg	3.5E-001	NA	1.6E+000		mg/kg	1.6E+000	Max	Site-Wide	1.6E+000	Max	Site-Wide
Vanadium	mg/kg	3.1E+001	NA	3.5E+001	J	mg/kg	3.5E+001	Max	Site-Wide	3.5E+001	Max	Site-Wide
Zinc	mg/kg	2.1E+002	NA	2.7E+002		mg/kg	2.7E+002	Max	Site-Wide	2.7E+002	Max	Site-Wide

* The 95UCL is calculated only for data sets of 10 or more data points.

TABLE 2-11-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 1
Exposure Medium:	Surface Water
Exposure Point:	Fire Pond, Puddle

File: SWA195.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data *	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Acetone	mg/L	0.005	NA	0.005		mg/L	0.005	Max	Site-Wide	0.005	Max	Site-Wide
Aluminum	mg/L	0.53	NA	0.96		mg/L	0.96	Max	Site-Wide	0.96	Max	Site-Wide
Ammonia	mg/L	0.19	NA	0.33		mg/L	0.33	Max	Site-Wide	0.33	Max	Site-Wide
Aroclor-1248	mg/L	0.00067	NA	0.00084		mg/L	0.00084	Max	Site-Wide	0.00084	Max	Site-Wide
Cadmium	mg/L	0.00086	NA	0.00072		mg/L	0.00072	Max	Site-Wide	0.00072	Max	Site-Wide
Chromium (total)	mg/L	0.0454	NA	0.083	J	mg/L	0.083	Max	Site-Wide	0.083	Max	Site-Wide
Copper	mg/L	0.016	NA	0.022		mg/L	0.022	Max	Site-Wide	0.022	Max	Site-Wide
Dichloroethane, 1,1-	mg/L	0.00225	NA	0.002	J	mg/L	0.002	Max	Site-Wide	0.002	Max	Site-Wide
Dichloroethene, 1,2-	mg/L	0.00175	NA	0.001		mg/L	0.001	Max	Site-Wide	0.001	Max	Site-Wide
Iron	mg/L	0.558	NA	0.851		mg/L	0.851	Max	Site-Wide	0.851	Max	Site-Wide
Lead	mg/L	0.01505	NA	0.0238	J	mg/L	0.0238	Max	Site-Wide	0.0238	Max	Site-Wide
Manganese	mg/L	0.041	NA	0.058		mg/L	0.058	Max	Site-Wide	0.058	Max	Site-Wide
2-Butanone	mg/L	0.019	NA	0.033		mg/L	0.033	Max	Site-Wide	0.033	Max	Site-Wide
Nitrate/Nitrite	mg/L	0.17	NA	0.25		mg/L	0.25	Max	Site-Wide	0.25	Max	Site-Wide
Zinc	mg/L	0.0575	NA	0.061		mg/L	0.061	Max	Site-Wide	0.061	Max	Site-Wide

* "NA" indicates that the chemical of potential concern has less than or equal to 10 data points in the data set.

TABLE 2-11-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Future
Medium:	Surface Water Area 2
Exposure Medium:	Surface Water
Exposure Point:	Ditch

File: SWA295.wk4

Chemical of Potential Concern	Units	Arithmetic Mean*	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethane	mg/L	NA	NA	1.0E-003	J	mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
1,2-Dichloroethene (total)	mg/L	NA	NA	3.0E-003		mg/L	3.0E-003	Max	Site-Wide	3.0E-003	Max	Site-Wide
2,4-Dimethylphenol	mg/L	NA	NA	1.2E-002		mg/L	1.2E-002	Max	Site-Wide	1.2E-002	Max	Site-Wide
2-Butanone	mg/L	NA	NA	1.4E-001		mg/L	1.4E-001	Max	Site-Wide	1.4E-001	Max	Site-Wide
2-Methylphenol	mg/L	NA	NA	5.0E-003		mg/L	5.0E-003	Max	Site-Wide	5.0E-003	Max	Site-Wide
4-Methyl-2-pentanone	mg/L	NA	NA	4.9E-002		mg/L	4.9E-002	Max	Site-Wide	4.9E-002	Max	Site-Wide
4-Methylphenol	mg/L	NA	NA	9.0E-003		mg/L	9.0E-003	Max	Site-Wide	9.0E-003	Max	Site-Wide
Acetone	mg/L	NA	NA	3.8E-001		mg/L	3.8E-001	Max	Site-Wide	3.8E-001	Max	Site-Wide
Aluminum	mg/L	NA	NA	4.7E-001		mg/L	4.7E-001	Max	Site-Wide	4.7E-001	Max	Site-Wide
Ammonia	mg/L	NA	NA	1.8E+001		mg/L	1.8E+001	Max	Site-Wide	1.8E+001	Max	Site-Wide
Arsenic	mg/L	NA	NA	4.5E-002		mg/L	4.5E-002	Max	Site-Wide	4.5E-002	Max	Site-Wide
Barium	mg/L	NA	NA	3.3E-001		mg/L	3.3E-001	Max	Site-Wide	3.3E-001	Max	Site-Wide
Benzene	mg/L	NA	NA	4.6E-001		mg/L	4.6E-001	Max	Site-Wide	4.6E-001	Max	Site-Wide
Beryllium	mg/L	NA	NA	2.8E-004		mg/L	2.8E-004	Max	Site-Wide	2.8E-004	Max	Site-Wide
bis(2-Chloroethyl) ether	mg/L	NA	NA	7.7E-002		mg/L	7.7E-002	Max	Site-Wide	7.7E-002	Max	Site-Wide
Chloroethane	mg/L	NA	NA	3.0E-002		mg/L	3.0E-002	Max	Site-Wide	3.0E-002	Max	Site-Wide
Chromium (total)	mg/L	NA	NA	2.8E-002	J	mg/L	2.8E-002	Max	Site-Wide	2.8E-002	Max	Site-Wide
Ethyl Benzene	mg/L	NA	NA	6.0E-003		mg/L	6.0E-003	Max	Site-Wide	6.0E-003	Max	Site-Wide
Iron	mg/L	NA	NA	1.4E+001		mg/L	1.4E+001	Max	Site-Wide	1.4E+001	Max	Site-Wide
Isophorone	mg/L	NA	NA	5.0E-003		mg/L	5.0E-003	Max	Site-Wide	5.0E-003	Max	Site-Wide
Lead	mg/L	NA	NA	4.2E-003	J	mg/L	4.2E-003	Max	Site-Wide	4.2E-003	Max	Site-Wide
Manganese	mg/L	NA	NA	9.9E-001		mg/L	9.9E-001	Max	Site-Wide	9.9E-001	Max	Site-Wide
Nic[illegible]	mg/L	NA	NA	8.0E-002		mg/L	8.0E-002	Max	Site-Wide	8.0E-002	Max	Site-Wide

TABLE 2-11-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Future
Medium:	Surface Water Area 2
Exposure Medium:	Surface Water
Exposure Point:	Ditch

File: SWA295.wk4

Chemical of Potential Concern	Units	Arithmetic Mean*	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nitrate/Nitrite	mg/L	NA	NA	1.2E-001		mg/L	1.2E-001	Max	Site-Wide	1.2E-001	Max	Site-Wide
Phenol	mg/L	NA	NA	2.3E-002		mg/L	2.3E-002	Max	Site-Wide	2.3E-002	Max	Site-Wide
Toluene	mg/L	NA	NA	7.0E-003		mg/L	7.0E-003	Max	Site-Wide	7.0E-003	Max	Site-Wide
Xylenes (total)	mg/L	NA	NA	3.5E-002		mg/L	3.5E-002	Max	Site-Wide	3.5E-002	Max	Site-Wide
Zinc	mg/L	NA	NA	5.3E-002		mg/L	5.3E-002	Max	Site-Wide	5.3E-002	Max	Site-Wide

* Data set contains only one data point, therefore, the arithmetic average and 95% UCL was not calculated.

TABLE 2-11-8

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 4A
Exposure Medium:	Surface Water
Exposure Point:	Wetlands

File: SWA4A95c.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data *	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,2'-oxybis(1-Chloropropane	mg/L	9.9E-003	1.6E-002	2.9E-002		mg/L	1.6E-002	95 UCL	Site-Wide	1.6E-002	95 UCL	Site-Wide
2-Butanone	mg/L	6.1E-003	1.4E-002	7.0E-004		mg/L	7.0E-004	Max	Site-Wide	7.0E-004	Max	Site-Wide
4-Methylphenol	mg/L	4.5E-003	6.1E-003	1.0E-003	J	mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
Acetone	mg/L	1.0E-002	1.5E-002	1.3E-002		mg/L	1.3E-002	Max	Site-Wide	1.0E-002	Mean	Site-Wide
Aluminum	mg/L	2.1E-001	NA	3.2E-001		mg/L	3.2E-001	Max	Site-Wide	2.1E-001	Mean	Site-Wide
Ammonia	mg/L	4.8E-001	NA	4.8E-001		mg/L	4.8E-001	Max	Site-Wide	4.8E-001	Max	Site-Wide
Arsenic	mg/L	2.2E-003	NA	2.3E-003	J	mg/L	2.3E-003	Max	Site-Wide	2.0E-003	Mean	Site-Wide
Barium	mg/L	1.1E-001	NA	1.2E-001		mg/L	1.2E-001	Max	Site-Wide	1.1E-001	Mean	Site-Wide
Benzene	mg/L	1.6E-001	1.3E+000	1.8E+000		mg/L	1.3E+000	95 UCL	Site-Wide	1.3E+000	95 UCL	Site-Wide
bis(2-Chloroethyl) ether	mg/L	4.8E-003	6.1E-003	8.0E-003	J	mg/L	6.1E-003	95 UCL	Site-Wide	6.0E-003	95 UCL	Site-Wide
bis(2-Ethylhexyl)phthalate	mg/L	4.9E-003	5.7E-003	8.0E-003	J	mg/L	5.7E-003	95 UCL	Site-Wide	6.0E-003	95 UCL	Site-Wide
Cadmium	mg/L	5.0E-003	3.4E-002	3.2E-002		mg/L	3.2E-002	Max	Site-Wide	5.0E-003	Mean	Site-Wide
Chloroethane	mg/L	4.8E-002	1.7E-001	4.4E-001		mg/L	1.7E-001	95 UCL	Site-Wide	1.7E-001	95 UCL	Site-Wide
Cyanide (total)	mg/L	3.0E-003	3.6E-003	5.6E-003		mg/L	3.6E-003	95 UCL	Site-Wide	4.0E-003	95 UCL	Site-Wide
Iron	mg/L	2.3E+001	6.5E+001	2.2E+002		mg/L	6.5E+001	95 UCL	Site-Wide	6.5E+001	95 UCL	Site-Wide
Isophorone	mg/L	4.6E-003	5.5E-003	2.0E-003	J	mg/L	2.0E-003	Max	Site-Wide	2.0E-003	Max	Site-Wide
Lead	mg/L	3.3E-002	2.9E-001	1.8E-001		mg/L	1.8E-001	Max	Site-Wide	3.3E-002	Mean	Site-Wide
Manganese	mg/L	6.9E-001	NA	9.4E-001		mg/L	9.4E-001	Max	Site-Wide	6.9E-001	Mean	Site-Wide
Nitrate/Nitrite	mg/L	5.0E-002	NA	5.0E-002		mg/L	5.0E-002	Max	Site-Wide	5.0E-002	Max	Site-Wide
Zinc	mg/L	1.1E-001	4.4E-001	4.6E-001		mg/L	4.4E-001	95 UCL	Site-Wide	4.4E-001	95 UCL	Site-Wide

* "NA" indicates that the chemical of potential concern has less than or equal to 10 data points in the data set.

TABLE 2-11-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Services NPL Site

Scenario Timeframe:	Current/Future
Medium:	Surface Water Area 4B
Exposure Medium:	Surface Water
Exposure Point:	Drainage Ditch

File: SWA4b96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean*	95% UCL of LogNormal Data*	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,1-Trichloroethane	mg/L	NA	NA	1.6E-001	D	mg/L	1.6E-001	Max	Site-Wide	1.6E-001	Max	Site-Wide
1,1,2,2-Tetrachloroethane	mg/L	NA	NA	1.0E-003		mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
1,1,2-Trichloroethane	mg/L	NA	NA	3.0E-003		mg/L	3.0E-003	Max	Site-Wide	3.0E-003	Max	Site-Wide
1,1-Dichloroethane	mg/L	NA	NA	2.4E-001		mg/L	2.4E-001	Max	Site-Wide	2.4E-001	Max	Site-Wide
1,2,4-Trimethylbenzene	mg/L	NA	NA	3.2E-002	D	mg/L	3.2E-002	Max	Site-Wide	3.2E-002	Max	Site-Wide
1,2-Dichlorobenzene	mg/L	NA	NA	7.0E-003		mg/L	7.0E-003	Max	Site-Wide	7.0E-003	Max	Site-Wide
1,2-Dichloroethane	mg/L	NA	NA	6.0E-003		mg/L	6.0E-003	Max	Site-Wide	6.0E-003	Max	Site-Wide
1,3,5-Trimethylbenzene	mg/L	NA	NA	1.1E-002		mg/L	1.1E-002	Max	Site-Wide	1.1E-002	Max	Site-Wide
1,3-Dichlorobenzene	mg/L	NA	NA	1.0E-003	J	mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
1,4-Dichlorobenzene	mg/L	NA	NA	1.0E-003		mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
Benzene	mg/L	NA	NA	1.1E-001	D	mg/L	1.1E-001	Max	Site-Wide	1.1E-001	Max	Site-Wide
Chlorobenzene	mg/L	NA	NA	1.0E-003	J	mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
Chloroethane	mg/L	NA	NA	2.7E-002	D	mg/L	2.7E-002	Max	Site-Wide	2.7E-002	Max	Site-Wide
Chloroform	mg/L	NA	NA	7.0E-003		mg/L	7.0E-003	Max	Site-Wide	7.0E-003	Max	Site-Wide
cis-1,2-Dichloroethene	mg/L	NA	NA	1.9E-001		mg/L	1.9E-001	Max	Site-Wide	1.9E-001	Max	Site-Wide
Ethyl Benzene	mg/L	NA	NA	5.0E-003		mg/L	5.0E-003	Max	Site-Wide	5.0E-003	Max	Site-Wide
m,p-xylene	mg/L	NA	NA	1.6E-002		mg/L	1.6E-002	Max	Site-Wide	1.6E-002	Max	Site-Wide
Naphthalene	mg/L	NA	NA	8.0E-003		mg/L	8.0E-003	Max	Site-Wide	8.0E-003	Max	Site-Wide
ortho-xylene	mg/L	NA	NA	2.9E-002	D	mg/L	2.9E-002	Max	Site-Wide	2.9E-002	Max	Site-Wide
Tetrachloroethene	mg/L	NA	NA	1.0E-003		mg/L	1.0E-003	Max	Site-Wide	1.0E-003	Max	Site-Wide
Toluene	mg/L	NA	NA	4.5E-002	D	mg/L	4.5E-002	Max	Site-Wide	4.5E-002	Max	Site-Wide
trans-1,2-Dichloroethene	mg/L	NA	NA	3.0E-003		mg/L	3.0E-003	Max	Site-Wide	3.0E-003	Max	Site-Wide
Trichloroethene	mg/L	NA	NA	3.0E-003		mg/L	3.0E-003	Max	Site-Wide	3.0E-003	Max	Site-Wide
Vinyl Chloride	mg/L	NA	NA	1.4E-001	D	mg/L	1.4E-001	Max	Site-Wide	1.4E-001	Max	Site-Wide

* Data set contains only one data point, therefore, the arithmetic average and the 95% UCL was not calculated.

TABLE 2-12-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Site-Wide
Exposure Point:	Lower Aquifer

File: LGWOVR96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
4-Methyl-2-pentanone	mg/L	1.3E-002	NA	9.0E-003		mg/L	9.0E-003	Max	Point Source			
Acetone	mg/L	1.1E-002	NA	2.2E-002		mg/L	2.2E-002	Max	Point Source			
Aluminum	mg/L	1.5E+000	NA	1.5E+001		mg/L	1.5E+001	Max	Point Source			
Ammonia	mg/L	1.1E+000	NA	3.7E+000		mg/L	3.7E+000	Max	Point Source			
Antimony	mg/L	1.0E-003	NA	8.3E-003		mg/L	8.3E-003	Max	Point Source			
Arsenic	mg/L	5.6E-003	NA	1.3E-001		mg/L	1.3E-001	Max	Point Source			
Barium	mg/L	2.9E-001	NA	1.6E+000		mg/L	1.6E+000	Max	Point Source			
Benzene	mg/L	1.7E-002	NA	3.1E-001		mg/L	3.1E-001	Max	Point Source			
Benzoic Acid	mg/L	1.8E-002	NA	6.0E-003		mg/L	6.0E-003	Max	Point Source			
Beryllium	mg/L	6.8E-004	NA	1.9E-003		mg/L	1.9E-003	Max	Point Source			
bis(2-Chloroethyl) ether	mg/L	7.0E-003	NA	4.4E-002		mg/L	4.4E-002	Max	Point Source			
bis(2-Ethylhexyl)phthalate	mg/L	1.0E-002	NA	9.3E-002		mg/L	9.3E-002	Max	Point Source			
Cadmium	mg/L	8.4E-004	NA	3.6E-002		mg/L	3.6E-002	Max	Point Source			
Chloroethane	mg/L	9.4E-002	NA	2.9E+000		mg/L	2.9E+000	Max	Point Source			
Chromium (total)	mg/L	2.6E-002	NA	3.6E-001		mg/L	3.6E-001	Max	Point Source			
cis-1,2-Dichloroethene	mg/L	5.2E-003	NA	3.9E-002		mg/L	3.9E-002	Max	Point Source			
Cobalt	mg/L	4.3E-003	NA	1.4E-002		mg/L	1.4E-002	Max	Point Source			
Copper	mg/L	1.8E-002	NA	1.3E-001		mg/L	1.3E-001	Max	Point Source			
Iron	mg/L	7.6E+000	NA	5.2E+001		mg/L	5.2E+001	Max	Point Source			
Isophorone	mg/L	5.4E-003	NA	5.0E-003		mg/L	5.0E-003	Max	Point Source			
Lead	mg/L	8.6E-003	NA	3.0E-001		mg/L	3.0E-001	Max	Point Source			
Manganese	mg/L	2.0E-001	NA	1.7E+000		mg/L	1.7E+000	Max	Point Source			
Mercury	mg/L	1.1E-004	NA	6.7E-004	J	mg/L	6.7E-004	Max	Point Source			

TABLE 2-12-1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Site-Wide
Exposure Point:	Lower Aquifer

File: LGWOVR96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Nickel	mg/L	2.3E-002	NA	2.6E-001		mg/L	2.6E-001	Max	Point Source			
Nitrate/Nitrite	mg/L	4.6E-001	NA	1.1E+000	J	mg/L	1.1E+000	Max	Point Source			
Phenol	mg/L	3.7E-002	NA	3.4E-001		mg/L	3.4E-001	Max	Point Source			
Toluene	mg/L	9.0E-003	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
trans-1,2-Dichloroethene	mg/L	4.0E-003	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
Vanadium	mg/L	3.0E-003	NA	3.0E-002		mg/L	3.0E-002	Max	Point Source			
Xylenes (total)	mg/L	1.2E-002	NA	6.0E-003		mg/L	6.0E-003	Max	Point Source			
Zinc	mg/L	3.9E-001	NA	3.3E+001		mg/L	3.3E+001	Max	Point Source			

TABLE 2-12-2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current
Medium:	Groundwater
Exposure Medium:	Area 5A Private Wells
Exposure Point:	Lower Aquifer

File: LGWPRVR95.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2-Butanone	mg/L	2.4E-003	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
Antimony	mg/L	9.1E-004	NA	1.7E-003		mg/L	1.7E-003	Max	Point Source			
Arsenic	mg/L	1.1E-003	NA	3.8E-003		mg/L	3.8E-003	Max	Point Source			
Barium	mg/L	1.4E-001	NA	2.9E-001		mg/L	2.9E-001	Max	Point Source			
bis(2-Ethylhexyl)phthalate	mg/L	2.0E-003	NA	1.0E-003		mg/L	1.0E-003	Max	Point Source			
Cadmium	mg/L	4.1E-004	NA	1.1E-003		mg/L	1.1E-003	Max	Point Source			
Chloroform	mg/L	6.4E-004	NA	1.0E-003		mg/L	1.0E-003	Max	Point Source			
Copper	mg/L	2.2E-002	NA	1.6E-001		mg/L	1.6E-001	Max	Point Source			
Iron	mg/L	2.3E+000	NA	4.5E+000		mg/L	4.5E+000	Max	Point Source			
Lead	mg/L	2.9E-003	NA	2.3E-002		mg/L	2.3E-002	Max	Point Source			
Manganese	mg/L	9.2E-002	NA	9.2E-001		mg/L	9.2E-001	Max	Point Source			
Methylene Chloride	mg/L	7.3E-004	NA	2.0E-004		mg/L	2.0E-004	Max	Point Source			
Nickel	mg/L	5.9E-003	NA	5.0E-003		mg/L	5.0E-003	Max	Point Source			
Trichloroethene	mg/L	6.0E-004	NA	3.0E-004		mg/L	3.0E-004	Max	Point Source			
Vinyl Chloride	mg/L	6.1E-004	NA	6.0E-004		mg/L	6.0E-004	Max	Point Source			
Zinc	mg/L	1.4E-001	NA	1.6E+000		mg/L	1.6E+000	Max	Point Source			

TABLE 2-12-3

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Area 5A Monitoring Wells
Exposure Point:	Lower Aquifer

File: LGWA5A95.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Aluminum	mg/L	1.2E+000	NA	7.6E+000		mg/L	7.6E+000	Max	Point Source			
Ammonia	mg/L	3.1E-001	NA	3.9E-001		mg/L	3.9E-001	Max	Point Source			
Arsenic	mg/L	1.7E-003	NA	4.9E-003		mg/L	4.9E-003	Max	Point Source			
Barium	mg/L	2.3E-001	NA	6.3E-001		mg/L	6.3E-001	Max	Point Source			
Benzoic Acid	mg/L	1.9E-002	NA	6.0E-003		mg/L	6.0E-003	Max	Point Source			
Beryllium	mg/L	7.0E-004	NA	1.1E-003		mg/L	1.1E-003	Max	Point Source			
bis(2-Ethylhexyl)phthalate	mg/L	1.1E-002	NA	5.6E-002		mg/L	5.6E-002	Max	Point Source			
Chromium (total)	mg/L	2.7E-002	NA	1.1E-001		mg/L	1.1E-001	Max	Point Source			
Cobalt	mg/L	3.9E-003	NA	6.7E-003		mg/L	6.7E-003	Max	Point Source			
Copper	mg/L	2.3E-002	NA	1.3E-001		mg/L	1.3E-001	Max	Point Source			
Iron	mg/L	3.9E+000	NA	1.3E+001	J	mg/L	1.3E+001	Max	Point Source			
Lead	mg/L	4.5E-003	NA	1.2E-002		mg/L	1.2E-002	Max	Point Source			
Manganese	mg/L	1.2E-001	NA	3.0E-001		mg/L	3.0E-001	Max	Point Source			
Nickel	mg/L	2.2E-002	NA	7.4E-002		mg/L	7.4E-002	Max	Point Source			
Nitrate/Nitrite	mg/L	4.6E-001	NA	9.1E-001	J	mg/L	9.1E-001	Max	Point Source			
Phenol	mg/L	6.6E-002	NA	3.3E-001		mg/L	3.3E-001	Max	Point Source			
Selenium	mg/L	1.2E-003	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
Thallium	mg/L	1.4E-003	NA	3.6E-003		mg/L	3.6E-003	Max	Point Source			
Toluene	mg/L	3.7E-003	NA	1.0E-003		mg/L	1.0E-003	Max	Point Source			
Vanadium	mg/L	2.4E-003	NA	1.3E-002		mg/L	1.3E-002	Max	Point Source			
Zinc	mg/L	1.8E-002	NA	4.2E-002		mg/L	4.2E-002	Max	Point Source			

TABLE 2-12-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 1
Exposure Point:	Upper Aquifer

File: UGWA195.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethane	mg/L	9.7E-002	NA	2.6E-002		mg/L	2.6E-002	Max	Point Source			
1,2-Dichlorobenzene	mg/L	1.6E-002	NA	5.1E-002		mg/L	5.1E-002	Max	Point Source			
1,2-Dichloroethene (total)	mg/L	9.5E-002	NA	1.4E-002		mg/L	1.4E-002	Max	Point Source			
1,3-Dichlorobenzene	mg/L	5.0E-003	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
1,4-Dichlorobenzene	mg/L	5.8E-003	NA	1.0E-002		mg/L	1.0E-002	Max	Point Source			
2,2'-oxybis(1-Chloropropan	mg/L	4.5E-002	NA	3.0E-001		mg/L	3.0E-001	Max	Point Source			
2,4-Dimethylphenol	mg/L	1.5E-002	NA	1.1E-001		mg/L	1.1E-001	Max	Point Source			
2-Methylnaphthalene	mg/L	7.8E-003	NA	2.7E-002		mg/L	2.7E-002	Max	Point Source			
2-Methylphenol	mg/L	6.2E-003	NA	1.3E-002	J	mg/L	1.3E-002	Max	Point Source			
4-methyl-2-Pentanone	mg/L	9.6E-002	NA	6.0E-003		mg/L	6.0E-003	Max	Point Source			
4-Methylphenol	mg/L	1.5E-002	NA	7.8E-002		mg/L	7.8E-002	Max	Point Source			
Aluminum	mg/L	1.4E-001	NA	2.8E-001		mg/L	2.8E-001	Max	Point Source			
Ammonia	mg/L	5.9E+000	NA	1.1E+001		mg/L	1.1E+001	Max	Point Source			
Aroclor-1248	mg/L	6.1E-004	NA	2.6E-003		mg/L	2.6E-003	Max	Point Source			
Arsenic	mg/L	2.2E-002	NA	5.7E-002		mg/L	5.7E-002	Max	Point Source			
Barium	mg/L	3.8E-001	NA	7.9E-001		mg/L	7.9E-001	Max	Point Source			
Benzene	mg/L	1.2E+001	NA	1.0E+002	J	mg/L	1.0E+002	Max	Point Source			
Benzoic Acid	mg/L	2.4E-002	NA	1.3E-002	J	mg/L	1.3E-002	Max	Point Source			
bis(2-Chloroethyl) ether	mg/L	4.1E-002	NA	1.6E-001		mg/L	1.6E-001	Max	Point Source			

TABLE 2-12-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 1
Exposure Point:	Upper Aquifer

File: UGWA195.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
bis(2-Ethylhexyl)phthalate	mg/L	5.0E-003	NA	5.0E-003		mg/L	5.0E-003	Max	Point Source			
Cadmium	mg/L	5.1E-004	NA	3.1E-003		mg/L	3.1E-003	Max	Point Source			
Chlorobenzene	mg/L	1.1E-001	NA	9.6E-002		mg/L	9.6E-002	Max	Point Source			
Chloroethane	mg/L	3.6E-001	NA	1.9E+000		mg/L	1.9E+000	Max	Point Source			
Chloromethane	mg/L	1.0E-001	NA	6.8E-002	J	mg/L	6.8E-002	Max	Point Source			
Cyanide (total)	mg/L	5.6E-003	NA	1.0E-002	J	mg/L	1.0E-002	Max	Point Source			
Di-n-octylphthalate	mg/L	6.9E-003	NA	2.1E-002	J	mg/L	2.1E-002	Max	Point Source			
Diethylphthalate	mg/L	5.3E-003	NA	9.0E-003		mg/L	9.0E-003	Max	Point Source			
Ethyl Benzene	mg/L	3.1E-001	NA	1.1E+000		mg/L	1.1E+000	Max	Point Source			
Iron	mg/L	2.0E+001	NA	5.1E+001		mg/L	5.1E+001	Max	Point Source			
Manganese	mg/L	2.6E+000	NA	4.3E+000		mg/L	4.3E+000	Max	Point Source			
Methylene Chloride	mg/L	9.7E-002	NA	1.0E-003	J	mg/L	1.0E-003	Max	Point Source			
Naphthalene	mg/L	1.6E-002	NA	7.1E-002		mg/L	7.1E-002	Max	Point Source			
Nickel	mg/L	2.8E-002	NA	5.3E-002		mg/L	5.3E-002	Max	Point Source			
Nitrate/Nitrite	mg/L	6.5E-001	NA	1.7E+000	J	mg/L	1.7E+000	Max	Point Source			
Phenol	mg/L	2.9E-002	NA	2.4E-001		mg/L	2.4E-001	Max	Point Source			
Selenium	mg/L	1.7E-003	NA	6.2E-003	J	mg/L	6.2E-003	Max	Point Source			
Thallium	mg/L	1.9E-003	NA	3.6E-003		mg/L	3.6E-003	Max	Point Source			
Toluene	mg/L	3.0E-001	NA	2.3E+000		mg/L	2.3E+000	Max	Point Source			

TABLE 2-12-4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 1
Exposure Point:	Upper Aquifer

File: UGWA195.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Vanadium	mg/L	6.7E-003	NA	2.0E-002	J	mg/L	2.0E-002	Max	Point Source			
Vinyl Chloride	mg/L	9.6E-002	NA	1.6E-002		mg/L	1.6E-002	Max	Point Source			
Xylenes (total)	mg/L	4.3E-001	NA	3.0E+000		mg/L	3.0E+000	Max	Point Source			
Zinc	mg/L	1.4E-001	NA	5.1E-001		mg/L	5.1E-001	Max	Point Source			

TABLE 2-12-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 4B
Exposure Point:	Upper Aquifer

File: UGWA4B96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethane	mg/L	7.8E-002	NA	6.0E-003		mg/L	6.0E-003	Max	Point Source			
1,2-Dichlorobenzene	mg/L	1.6E-002	NA	5.1E-002		mg/L	5.1E-002	Max	Point Source			
1,2-Dichloroethane	mg/L	7.8E-002	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
1,2-Dichloroethene (total)	mg/L	9.4E-002	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
1,4-Dichlorobenzene	mg/L	1.3E-002	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
2,2'-oxybis(1-Chloropropane	mg/L	1.7E-002	NA	3.0E-001		mg/L	3.0E-001	Max	Point Source			
2,4-Dimethylphenol	mg/L	9.8E-003	NA	1.1E-001		mg/L	1.1E-001	Max	Point Source			
4-Methylphenol	mg/L	9.6E-003	NA	7.8E-002		mg/L	7.8E-002	Max	Point Source			
Aluminum	mg/L	4.1E-001	NA	1.6E+000		mg/L	1.6E+000	Max	Point Source			
Ammonia	mg/L	5.7E+000	NA	1.1E+001		mg/L	1.1E+001	Max	Point Source			
Antimony	mg/L	1.4E-003	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
Aroclor-1248	mg/L	4.9E-004	NA	2.6E-003		mg/L	2.6E-003	Max	Point Source			
Arsenic	mg/L	1.1E-002	NA	4.6E-002		mg/L	4.6E-002	Max	Point Source			
Barium	mg/L	1.3E-001	NA	5.2E-001		mg/L	5.2E-001	Max	Point Source			
Benzene	mg/L	5.9E+000	NA	1.0E+002	J	mg/L	1.0E+002	Max	Point Source			
Beryllium	mg/L	6.3E-004	NA	1.3E-003		mg/L	1.3E-003	Max	Point Source			
bis(2-Chloroethyl) ether	mg/L	1.9E-002	NA	1.6E-001		mg/L	1.6E-001	Max	Point Source			
bis(2-Ethylhexyl)phthalate	mg/L	6.3E-003	NA	1.6E-002		mg/L	1.6E-002	Max	Point Source			
Cadmium	mg/L	4.7E-004	NA	3.1E-003		mg/L	3.1E-003	Max	Point Source			
Chloroethane	mg/L	3.1E-001	NA	1.9E+000		mg/L	1.9E+000	Max	Point Source			
Chloromethane	mg/L	7.8E-002	NA	6.8E-002	J	mg/L	6.8E-002	Max	Point Source			
Chromium (total)	mg/L	3.7E-003	NA	1.1E-002		mg/L	1.1E-002	Max	Point Source			

TABLE 2-12-5

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 4B
Exposure Point:	Upper Aquifer

File: UGWA4B96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
cis-1,2-Dichloroethene	mg/L	3.0E-002	NA	2.0E-004	J	mg/L	2.0E-004	Max	Point Source			
Cobalt	mg/L	7.4E-003	NA	3.5E-003		mg/L	3.5E-003	Max	Point Source			
Copper	mg/L	6.8E-003	NA	2.2E-002		mg/L	2.2E-002	Max	Point Source			
Diethylphthalate	mg/L	6.0E-003	NA	9.0E-003		mg/L	9.0E-003	Max	Point Source			
Ethyl Benzene	mg/L	9.3E-002	NA	7.8E-001		mg/L	7.8E-001	Max	Point Source			
Iron	mg/L	1.6E+001	NA	5.1E+001		mg/L	5.1E+001	Max	Point Source			
Isophorone	mg/L	4.9E-003	NA	7.5E-003		mg/L	7.5E-003	Max	Point Source			
Lead	mg/L	2.2E-003	NA	7.7E-003		mg/L	7.7E-003	Max	Point Source			
Manganese	mg/L	1.2E+000	NA	4.3E+000		mg/L	4.3E+000	Max	Point Source			
Methylene Chloride	mg/L	8.9E-002	NA	7.0E-002	J	mg/L	7.0E-002	Max	Point Source			
Naphthalene	mg/L	5.6E-003	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
Nickel	mg/L	2.7E-002	NA	5.3E-002		mg/L	5.3E-002	Max	Point Source			
Nitrate	mg/L	2.3E-002	NA	2.3E-002		mg/L	2.3E-002	Max	Point Source			
Phenol	mg/L	3.9E-002	NA	2.4E-001		mg/L	2.4E-001	Max	Point Source			
Thallium	mg/L	1.3E-003	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
Toluene	mg/L	1.5E-001	NA	2.3E+000		mg/L	2.3E+000	Max	Point Source			
trans-1,2-Dichloroethene	mg/L	3.0E-002	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
Vanadium	mg/L	4.6E-003	NA	2.0E-002		mg/L	2.0E-002	Max	Point Source			
Vinyl Chloride	mg/L	7.8E-002	NA	9.0E-004		mg/L	9.0E-004	Max	Point Source			
Xylenes (total)	mg/L	1.9E-001	NA	3.0E+000		mg/L	3.0E+000	Max	Point Source			
Zinc	mg/L	5.0E-002	NA	5.1E-001		mg/L	5.1E-001	Max	Point Source			

TABLE 2-12-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5A
Exposure Point:	Upper Aquifer

File: UGWA5A95.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
cis-1,2-Dichloroethene	mg/L	2.3E-002	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
Cobalt	mg/L	6.7E-003	NA	4.2E-003		mg/L	4.2E-003	Max	Point Source			
Copper	mg/L	1.7E-002	NA	7.3E-002		mg/L	7.3E-002	Max	Point Source			
Cyanide (total)	mg/L	7.4E-003	NA	1.7E-002		mg/L	1.7E-002	Max	Point Source			
Di-n-octylphthalate	mg/L	9.2E-003	NA	4.7E-002	J	mg/L	4.7E-002	Max	Point Source			
Diethylphthalate	mg/L	5.6E-003	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
Ethyl Benzene	mg/L	8.6E-002	NA	7.7E-001		mg/L	7.7E-001	Max	Point Source			
Iron	mg/L	1.0E+001	NA	2.7E+001		mg/L	2.7E+001	Max	Point Source			
Isophorone	mg/L	1.1E-002	NA	3.5E-002		mg/L	3.5E-002	Max	Point Source			
Lead	mg/L	7.1E-003	NA	1.6E-002		mg/L	1.6E-002	Max	Point Source			
Manganese	mg/L	1.4E+000	NA	4.0E+000		mg/L	4.0E+000	Max	Point Source			
Methylene Chloride	mg/L	3.1E-002	NA	1.7E-002		mg/L	1.7E-002	Max	Point Source			
Naphthalene	mg/L	4.0E-002	NA	1.4E-001		mg/L	1.4E-001	Max	Point Source			
Nickel	mg/L	2.5E-002	NA	6.2E-002	J	mg/L	6.2E-002	Max	Point Source			
Nitrate/Nitrite	mg/L	7.0E-001	NA	1.6E+000	J	mg/L	1.6E+000	Max	Point Source			
Pentachlorophenol	mg/L	1.5E-002	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
Phenol	mg/L	3.0E-002	NA	6.4E-002		mg/L	6.4E-002	Max	Point Source			
Selenium	mg/L	1.2E-003	NA	2.6E-003		mg/L	2.6E-003	Max	Point Source			
trans-1,2-Dichloroethene	mg/L	2.3E-002	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
Vanadium	mg/L	3.7E-003	NA	2.6E-002	J	mg/L	2.6E-002	Max	Point Source			
Vinyl Chloride	mg/L	2.6E-002	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
Xylenes (total)	mg/L	3.6E-001	NA	3.9E+000		mg/L	3.9E+000	Max	Point Source			
Zinc	mg/L	8.0E-002	NA	8.9E-001		mg/L	8.9E-001	Max	Point Source			

TABLE 2-12-6

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5A
Exposure Point:	Upper Aquifer

File: UGWA5A95.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1-Dichloroethane	mg/L	2.5E-002	NA	2.1E-002		mg/L	2.1E-002	Max	Point Source			
1,2-Dichlorobenzene	mg/L	8.8E-003	NA	5.0E-003	J	mg/L	5.0E-003	Max	Point Source			
1,2-Dichloroethane	mg/L	2.6E-002	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
1,2-Dichloroethene (total)	mg/L	2.6E-002	NA	2.6E-002		mg/L	2.6E-002	Max	Point Source			
1,4-Dichlorobenzene	mg/L	1.1E-002	NA	1.1E-002		mg/L	1.1E-002	Max	Point Source			
2,2'-oxybis(1-Chloropropane	mg/L	5.9E-003	NA	9.5E-003		mg/L	9.5E-003	Max	Point Source			
2,4-Dimethylphenol	mg/L	1.2E-002	NA	5.8E-002		mg/L	5.8E-002	Max	Point Source			
2-Methylnaphthalene	mg/L	5.1E-003	NA	7.0E-003		mg/L	7.0E-003	Max	Point Source			
4-methyl-2-Pentanone	mg/L	5.1E-002	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
Aluminum	mg/L	1.7E-001	NA	3.4E-001		mg/L	3.4E-001	Max	Point Source			
Ammonia	mg/L	2.2E+000	NA	4.0E+000		mg/L	4.0E+000	Max	Point Source			
Antimony	mg/L	1.2E-003	NA	2.1E-003		mg/L	2.1E-003	Max	Point Source			
Arsenic	mg/L	3.8E-002	NA	1.1E-001		mg/L	1.1E-001	Max	Point Source			
Barium	mg/L	2.0E-001	NA	3.8E-001		mg/L	3.8E-001	Max	Point Source			
Benzene	mg/L	8.4E-001	NA	3.0E+000		mg/L	3.0E+000	Max	Point Source			
Benzo(k)fluoranthene	mg/L	6.1E-003	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			
Benzoic Acid	mg/L	1.0E-002	NA	1.1E-002	J	mg/L	1.1E-002	Max	Point Source			
beta-BHC	mg/L	2.2E-005	NA	5.0E-005	J	mg/L	5.0E-005	Max	Point Source			
bis(2-Chloroethyl) ether	mg/L	2.3E-002	NA	7.4E-002		mg/L	7.4E-002	Max	Point Source			
bis(2-Ethylhexyl)phthalate	mg/L	8.0E-003	NA	2.9E-002		mg/L	2.9E-002	Max	Point Source			
Cadmium	mg/L	4.8E-004	NA	3.0E-004		mg/L	3.0E-004	Max	Point Source			
Chlorobenzene	mg/L	2.4E-002	NA	4.2E-002		mg/L	4.2E-002	Max	Point Source			
Chloroethane	mg/L	2.3E-001	NA	7.2E-001		mg/L	7.2E-001	Max	Point Source			
Chromium (total)	mg/L	1.6E-002	NA	6.2E-002		mg/L	6.2E-002	Max	Point Source			
Chrysene	mg/L	6.0E-003	NA	3.0E-003		mg/L	3.0E-003	Max	Point Source			

TABLE 2-12-7

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5B
Exposure Point:	Upper Aquifer

File: UGWA5B96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,6-Dinitrotoluene	mg/L	4.3E-003	NA	9.0E-004	J	mg/L	9.0E-004	Max	Point Source			
Aluminum	mg/L	1.1E-001	NA	3.3E-001		mg/L	3.3E-001	Max	Point Source			
Antimony	mg/L	8.3E-004	NA	1.5E-003		mg/L	1.5E-003	Max	Point Source			
Arsenic	mg/L	8.1E-003	NA	1.4E-002		mg/L	1.4E-002	Max	Point Source			
Barium	mg/L	1.2E-001	NA	1.6E-001		mg/L	1.6E-001	Max	Point Source			
Benzene	mg/L	6.5E+000	NA	9.5E+000		mg/L	9.5E+000	Max	Point Source			
Beryllium	mg/L	5.7E-004	NA	1.3E-003		mg/L	1.3E-003	Max	Point Source			
bis(2-Chloroethyl) ether	mg/L	8.4E-003	NA	1.8E-002		mg/L	1.8E-002	Max	Point Source			
bis(2-Ethylhexyl)phthalate	mg/L	5.3E-003	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
Bromodichloromethane	mg/L	1.5E-001	NA	9.0E-004		mg/L	9.0E-004	Max	Point Source			
Chloroethane	mg/L	6.7E-001	NA	1.0E+000		mg/L	1.0E+000	Max	Point Source			
Chloroform	mg/L	1.5E-001	NA	1.0E-003		mg/L	1.0E-003	Max	Point Source			
Chloromethane	mg/L	1.3E-001	NA	3.8E-002	J	mg/L	3.8E-002	Max	Point Source			
Chromium (total)	mg/L	3.9E-003	NA	7.8E-003		mg/L	7.8E-003	Max	Point Source			
Cobalt	mg/L	3.0E-003	NA	3.5E-003		mg/L	3.5E-003	Max	Point Source			
Copper	mg/L	4.9E-003	NA	1.3E-002		mg/L	1.3E-002	Max	Point Source			
Iron	mg/L	2.4E+001	NA	3.1E+001	J	mg/L	3.1E+001	Max	Point Source			
Isophorone	mg/L	4.3E-003	NA	1.0E-003		mg/L	1.0E-003	Max	Point Source			
Lead	mg/L	2.1E-003	NA	7.7E-003		mg/L	7.7E-003	Max	Point Source			
Manganese	mg/L	5.4E-001	NA	6.9E-001	J	mg/L	6.9E-001	Max	Point Source			
Mercury	mg/L	1.3E-004	NA	3.0E-004		mg/L	3.0E-004	Max	Point Source			

TABLE 2-12-7

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

American Chemical Service NPL Site

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Area 5B
Exposure Point:	Upper Aquifer

File: UGWA5B96.wk4

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of LogNormal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Methylene Chloride	mg/L	1.8E-001	NA	7.0E-002	J	mg/L	7.0E-002	Max	Point Source			
Nickel	mg/L	1.2E-002	NA	1.9E-002		mg/L	1.9E-002	Max	Point Source			
Nitrate	mg/L	2.3E-002	NA	2.3E-002		mg/L	2.3E-002	Max	Point Source			
Phenol	mg/L	6.6E-002	NA	1.1E-001		mg/L	1.1E-001	Max	Point Source			
Thallium	mg/L	1.5E-003	NA	4.0E-003		mg/L	4.0E-003	Max	Point Source			
Toluene	mg/L	1.5E-001	NA	2.0E-003		mg/L	2.0E-003	Max	Point Source			
trans-1,2-Dichloroethene	mg/L	4.4E-002	NA	1.0E-003		mg/L	1.0E-003	Max	Point Source			
Vanadium	mg/L	3.1E-003	NA	2.4E-003		mg/L	2.4E-003	Max	Point Source			
Zinc	mg/L	1.2E-002	NA	4.6E-003		mg/L	4.6E-003	Max	Point Source			

Tables 3-1
through 3-58

TABLE 3-1

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 1) - Griffith, Indiana

File: table3_1.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface soil	Surface Soil	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Although large portions of Area 1 are covered by buildings and have a maintained cover of aggregate material, worker exposures to surface soil may occur in areas without aggregate cover.
						Ingestion	On-site	Quant	Although large portions of Area 1 are covered by buildings and have a maintained cover of aggregate material, worker exposures to surface soil may occur in areas without aggregate cover.
				Construction Worker	Adult	Dermal	On-site	None	No construction during the current land use without reassessment.
						Ingestion	On-site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassing is controlled by ACS under current land use.
						Ingestion	On-site	None	Trespassing is controlled by ACS under current land use.
		Air	Vapors / Particulates	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	Quant	Although large portions of Area 1 are covered by buildings and have a maintained cover of aggregate material, worker exposures to soil may occur in areas without aggregate cover.
				Construction Worker	Adult	Inhalation	On-site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassing is controlled by ACS under current land use.
	Subsurface soil	Subsurface soil	Subsurface soil	Routine Worker	Adult	Dermal	On-Site	None	Routine workers are not expected to engage in intrusive activities greater than 2 feet below the ground surface.
						Ingestion	On-site	None	Routine workers are not expected to engage in intrusive activities greater than 2 feet below the ground surface.
				Utility Worker	Adult	Dermal	On-Site	Quant	Although large portions of Area 1 are covered by buildings and have a maintained cover of aggregate material, worker exposures to soil may occur in areas without aggregate cover.
						Ingestion	On-site	Quant	Although large portions of Area 1 are covered by buildings and have a maintained cover of aggregate material, worker exposures to soil may occur in areas without aggregate cover.
				Construction Worker	Adult	Dermal	On-site	None	No construction during the current land use without reassessment.
						Ingestion	On-site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassing is controlled by ACS under current land use.
						Ingestion	On-site	None	Trespassing is controlled by ACS under current land use.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Routine workers are not expected to engage in intrusive activities.
				Utility Worker	Adult	Inhalation	On-site	Quant	Utility workers are assumed to work without personal protective equipment.
				Construction Worker	Adult	Inhalation	On-site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassing is controlled by ACS under current land use.

TABLE 3-1

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 1) - Griffith, Indiana

File: table3_1.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Workers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Workers are likely come into contact with surface water onsite.
				Construction Worker	Adult	Dermal	On-site	None	Construction workers are not expected to come into contact with onsite surface water.
						Ingestion	On-site	None	Construction workers are not expected to come into contact with onsite surface water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassing is controlled by ACS under current land use.
						Ingestion	On-site	None	Trespassing is controlled by ACS under current land use.
	Air	Air	Vapor emissions from Area 2	Routine / Utility Worker	Adult	Inhalation	On-Site	Qual	Routine workers are likely come into contact with vapor emissions from Area 2 soil.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 2 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassing is controlled by ACS under current land use.
			Vapor emissions from Area 3	Routine / Utility Worker	Adult	Inhalation	On-Site	Qual	Routine workers are likely come into contact with vapor emissions from Area 3 soil.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassing is controlled by ACS under current land use.
	Other	Soil	Buried Drums	Routine Worker / Utility Worker	Adult	Dermal	On-Site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled hazardous waste release. However, this pathway is not easily quantifiable.
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled hazardous waste release. However, this pathway is not easily quantifiable.
				Construction Worker	Adult	Dermal	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled hazardous waste release. However, this pathway is not easily quantifiable.
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled hazardous waste release. However, this pathway is not easily quantifiable.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassing is controlled by ACS under current land use.
						Ingestion	On-site	None	Trespassing is controlled by ACS under current land use.
		Air	Vapors from buried drums	Routine / Utility Worker	Adult	Inhalation	On-Site	Qual	Routine workers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassing is controlled by ACS under current land use.

TABLE 3-1

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 1) - Griffith, Indiana

File: table3_1.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water from upper aquifer	Routine Worker	Adult	Dermal	On-Site	None	Routine workers are not expected to engage in activities that would place them in contact with upper aquifer groundwater
						Ingestion	On-Site	None	Routine workers are not expected to engage in activities that would place them in contact with upper aquifer groundwater
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers are expected to engage in activities that would place them in direct contact with upper aquifer groundwater.
						Ingestion	On-Site	None	Utility workers are not expected to ingest water from the upper aquifer.
				Construction Worker	Adult	Dermal	On-Site	None	No construction during the current land use without reassessment.
						Ingestion	On-Site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Dermal	On-Site	None	Trespassing is controlled by ACS under current land use.
						Ingestion	On-Site	None	Trespassing is controlled by ACS under current land use.
		Air	Vapors from upper aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Routine workers are not expected to engage in activities that would place them in contact with upper aquifer groundwater.
				Utility Worker	Adult	Inhalation	On-Site	Quant	Utility workers are assumed to work without personal protective equipment and may inhale vapors from upper aquifer water.
				Construction Worker	Adult	Inhalation	On-Site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Inhalation	On-Site	None	Trespassing is controlled by ACS under current land use.
		Groundwater	Water from lower aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
						Ingestion	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
				Construction Worker	Adult	Dermal	On-Site	None	No construction during the current land use without reassessment.
						Ingestion	On-Site	None	No construction during the current land use without reassessment.
				Trespasser/Visitor	Adolescents	Dermal	On-Site	None	Trespassing is controlled by ACS under current land use.
						Ingestion	On-Site	None	Trespassing is controlled by ACS under current land use.
		Air	Vapors from lower aquifer	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
				Construction Worker	Adult	Inhalation	On-Site	None	No construction during the current land use without reassessment.
				Trespaser/Visitor	Adolescents	Inhalation	On-Site	None	Trespassing is controlled by ACS under current land use.

TABLE 3-1

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 1) - Griffith, Indiana

File: table3_1.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface & subsurface soil	Surface & subsurface soil	Surface & subsurface soil	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Future workers may be exposed to surface and subsurface soil in the future if cover is not maintained.
						Ingestion	On-site	Quant	Future workers may be exposed to surface and subsurface soil in the future if cover is not maintained.
				Construction Worker	Adult	Dermal	On-site	Quant	Due to shallow depth to groundwater, construction workers are assumed to work only to a depth of 4 feet below surface.
						Ingestion	On-site	Quant	Due to shallow depth to groundwater, construction workers are assumed to work only to a depth of 4 feet below surface.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespasser exposures to surface soil may accur in areas without aggregate cover.
						Ingestion	On-site	Quant	Trespasser exposures to surface soil may accur in areas without aggregate cover.
		Air	Vapors / Particulates	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	Quant	Future workers may be exposed to surface soil in the future if cover is not maintained.
				Construction Worker	Adult	Inhalation	On-site	Quant	Construction workers are assumed to work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespasser exposures to surface soil may accur in areas without aggregate cover.
	Sediments	Sediments	Sediments	Routine Worker &	Adult	Dermal	On-site	Quant	Future Worker exposures to sediment are possible in Area I.
				Utility Worker		Ingestion	On-site	Quant	Future Worker exposures to sediment are possible in Area I.
				Trespasser/Visitor	Adolescent	Dermal	On-site	Quant	Future Trespasser/Visitor exposures to sediment are possible in Area I.
					Adolescent	Ingestion	On-site	Quant	Future Trespasser/Visitor exposures to sediment are possible in Area I.
	Groundwater	Groundwater	Water from upper aquifer	Routine Worker	Adult	Dermal	On-Site	None	Routine workers are not expected to engage in activities that would place them in contact with upper aquifer groundwater.
						Ingestion	On-site	None	Routine workers are not expected to engage in activities that would place them in contact with upper aquifer groundwater.
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers are expected to engage in activities that would place them in contact with upper aquifer groundwater.
						Ingestion	On-Site	None	Utility workers are not expected to ingest water from the upper aquifer.
				Construction Worker	Adult	Dermal	On-site	Quant	Construction workers are assumed to work without personal protective equipment and may contact upper aquifer water.
						Ingestion	On-site	None	Construction workers are not expected to ingest water from the upper aquifer.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to engage in intrusive activities that would place them in contact with upper aquifer groundwater.

(((

TABLE 3-1

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 1) - Griffith, Indiana

File: table3_1.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Groundwater	Water from Upper Aquifer	Trespasser/Visitor	Adolescents	Ingestion	On-site	None	*Trespassers are not expected to engage in intrusive activities that would place them in contact with upper aquifer groundwater.*
		Air	Vapors from upper aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Routine workers are not expected to engage in activities that would place them in contact with upper aquifer groundwater.
				Utility Worker	Adult	Inhalation	On-site	Quant	Utiltiy workers are assumed to work without personal protective equipment and may inhale vapors from upper aquifer water.
				Construction Worker	Adult	Inhalation	On-site	Quant	Construction workers are assumed to work without personal protective equipment and may inhale vapors from upper aquifer water.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to engage in intrusive activities that would place them in contact with upper aquifer groundwater.
		Groundwater	Water from lower aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Routine workers and utility workers may come into contact with water from *onsite wells in the lower aquifer.*
						Ingestion	On-site	Quant	Routine workers and utility workers may come into contact with water from *onsite wells in the lower aquifer.*
				Construction Worker	Adult	Dermal	On-site	None	Construction workers are not expected to come into contact with water from onsite wells in the lower aquifer.
						Ingestion	On-site	None	Construction workers are not expected to come into contact with water from onsite wells in the lower aquifer.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to be in contact with lower aquifer groundwater.
						Ingestion	On-site	None	Trespassers are not expected to be in contact with lower aquifer groundwater.
		Air	Vapors from lower aquifer	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
				Construction Worker	Adult	Inhalation	On-site	None	Construction workers are not expected to come into contact with water from onsite wells in the lower aquifer.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to be in contact with lower aquifer groundwater.
	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Routine Worker	Adult	Dermal	On-Site	Quant	Routine workers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Routine workers are likely come into contact with surface water onsite.
				Utility Worker	Adult	Dermal	On-Site	None	Utility workers are not likely come into contact with surface water onsite.
						Ingestion	On-site	None	Utility workers are not likely come into contact with surface water onsite.
				Construction Worker	Adult	Dermal	On-site	Quant	Construction workers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Construction workers are likely come into contact with surface water onsite.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Trespassers are likely come into contact with surface water onsite.

TABLE 3-1

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 1) - Griffith, Indiana

File: table3_1.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Air	Air	Vapor emissions from Area 2	Routine / Utility Workers	Adult	Inhalation	On-Site	Qual	Workers are likely come into contact with vapor emissions from Area 2 soil, but this pathway is not significant.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 2 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers are likely come into contact with vapor emissions from Area 2 soil, but this pathway is not significant.
			Vapor emissions from Area 3	Routine / Utility Workers	Adult	Inhalation	On-Site	Qual	Workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
	Other	Soil	Buried Drums	Routine Worker / Utility Worker	Adult	Dermal	On-Site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable .
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable .
				Construction Worker	Adult	Dermal	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable .
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable .
				Trespasser/Visitor	Adolescents	Dermal	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable .
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable .
		Air	Vapors from buried drums	Routine Worker	Adult	Inhalation	On-Site	Qual	Routine workers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.

(((

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface soil	Surface Soil	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
						Ingestion	On-site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Utility Worker	Adult	Inhalaiton	On-site	Quant	Utility workers are assumed to be in contact with vapors/particulates in surface and subsurface soils.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
	Subsurface soil	Subsurface soil	Subsurface soil	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
						Ingestion	On-Site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Although trespassers may gain access to the site, it is unlikely
						Ingestion	On-site	None	that they will come into contact with subsurface soil.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Utility Worker	Adult	Inhalation	On-site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Although trespassers may gain access to the site, it is unlikely that they will come into contact with subsurface soil.
	Sediments	Sediments	Sediments	Trespasser/Visitor	Adolescents	Dermal	On-Site	Quant	Trespassers may gain access to this area and come into contact with sediment
						Ingestion	On-site	Quant	Trespassers may gain access to this area and come into contact with sediment

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water from upper aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), trespassers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), trespassers are not expected to have contact with water.
		Air	Vapors from upper aquifer	Routine / Utility Worker	Adult	Inhalation	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
	Air	Air	Vapor emissions from Area 3	Routine / Utility Worker	Adult	Inhalation	On-Site	Qual	Workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers maycome into contact with vapor emissions from Area 3 soil, but this pathway is not significant.

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface and subsurface soil	Surface and subsurface soil	Surface and subsurface soil	Routine Worker	Adult	Dermal	On-Site	Quant	Future workers may be exposed to surface and subsurface soil to a depth of 10 feet. It was assumed soil to a two foot depth may be brought to the surface during utility maintenance and construction work and intermixed with the existing surface soil.
						Ingestion	On-site	Quant	Future workers may be exposed to surfae and subsurface soil to a depth of 10 feet. It was assumed soiil to a two foot depth may be brought to the surface during utility maintenance and construction work and intermixed with the existing surface soil.
				Utility Worker	Adult	Dermal	On-site	Quant	Workers are assumed to be in contact with subsurface soils to a depth of 10 feet.
						Ingestion	On-site	Quant	Workers are assumed to be in contact with subsurface soils to a depth of 10 feet.
				Construction Worker	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0 - 4 feet bgs and work without personal protective equipment.
				(Slab on Grade)		Ingestion	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0 - 4 feet bgs and work without personal protective equipment.
				Construction worker (other)	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0-10 feet bgs and work without personal protective equipment.
						Ingestion	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0-10 feet bgs and work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
						Ingestion	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	Quant	Routine workers are assumed to be in contact with vapors/particulates subsurface soils brought to the surface.
				Utility Worker	Adult	Inhalation	On-Site	Quant	Utility workers are assumed to be in contact with vapors/particulates subsurface soils brought to the surface.
				Construction Worker (Slab on grade)	Adult	Inhalation	On-site	Quant	Construction workers are assumed to be in contact with vapors/particulates from subsurface soils brought to the surface and work without personal protective equipment.
				Construction worker (other)	Adult	Inhalation	On-site	Quant	Construction workers are assumed to be in contact with vapors/particulates from subsurface soils brought to the surface and work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface soil	Surface Soil	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
						Ingestion	On-site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Utility Worker	Adult	Inhalaiton	On-site	Quant	Utility workers are assumed to be in contact with vapors/particulates in surface and subsurface soils.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
	Subsurface soil	Subsurface soil	Subsurface soil	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
						Ingestion	On-Site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Although trespassers may gain access to the site, it is unlikely
						Ingestion	On-site	None	that they will come into contact with subsurface soil.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Utility Worker	Adult	Inhalation	On-site	Quant	Utility workers may be exposed to soil from 0-10' bgs.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Although trespassers may gain access to the site, it is unlikely that they will come into contact with subsurface soil.
	Sediments	Sediments	Sediments	Trespasser/Visitor	Adolescents	Dermal	On-Site	Quant	Trespassers may gain access to this area and come into contact with sediment
						Ingestion	On-site	Quant	Trespassers may gain access to this area and come into contact with sediment

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water from upper aquifer	Routine Worker &	Adult	Dermal	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
				Utility Worker		Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), trespassers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), trespassers are not expected to have contact with water.
		Air	Vapors from upper aquifer	Routine / Utility Worker	Adult	Inhalation	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
	Air	Air	Vapor emissions from Area 3	Routine / Utility Worker	Adult	Inhalation	On-Site	Qual	Workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers maycome into contact with vapor emissions from Area 3 soil, but this pathway is not significant.

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface and subsurface soil	Surface and subsurface soil	Surface and subsurface soil	Routine Worker	Adult	Dermal	On-Site	Quant	Future workers may be exposed to surface and subsurface soil to a depth of 10 feet. It was assumed soil to a two foot depth may be brought to the surface during utility maintenance and construction work and intermixed with the existing surface soil.
						Ingestion	On-site	Quant	Future workers may be exposed to surfae and subsurface soil to a depth of 10 feet. It was assumed soiil to a two foot depth may be brought to the surface during utility maintenance and construction work and intermixed with the existing surface soil.
				Utility Worker	Adult	Dermal	On-site	Quant	Workers are assumed to be in contact with subsurface soils to a depth of 10 feet.
						Ingestion	On-site	Quant	Workers are assumed to be in contact with subsurface soils to a depth of 10 feet.
				Construction Worker	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0 - 4 feet bgs and work without personal protective equipment.
				(Slab on Grade)		Ingestion	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0 - 4 feet bgs and work without personal protective equipment.
				Construction worker (other)	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0-10 feet bgs and work without personal protective equipment.
						Ingestion	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0-10 feet bgs and work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
						Ingestion	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	Quant	Routine workers are assumed to be in contact with vapors/particulates subsurface soils brought to the surface.
				Utility Worker	Adult	Inhalation	On-Site	Quant	Utility workers are assumed to be in contact with vapors/particulates subsurface soils brought to the surface.
				Construction Worker (Slab on grade)	Adult	Inhalation	On-site	Quant	Construction workers are assumed to be in contact with vapors/particulates from subsurface soils brought to the surface and work without personal protective equipment.
				Construction worker (other)	Adult	Inhalation	On-site	Quant	Construction workers are assumed to be in contact with vapors/particulates from subsurface soils brought to the surface and work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Routine Worker	Adult	Dermal	On-Site	Quant	Routine workers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Routine workers are likely come into contact with surface water onsite.
				Utility Worker	Adult	Dermal	On-Site	None	Utility workers are not likely to come into contact with surface water onsite.
						Ingestion	On-site	None	Utility workers are not likely to come into contact with surface water onsite.
	Sediments	Sediments	Sediments	Routine Worker	Adult	Dermal	On-site	Quant	Future routine worker exposures to sediment are possible in Area 2.
						Ingestion	On-site	Quant	Future routine worker exposures to sediment are possible in Area 2.
				Trespasser/Visitor	Adolescent	Dermal	On-site	Quant	Future trespasser/visitor exposures to sediment are possible in Area 2.
						Ingestion	On-site	Quant	Future trespasser/visitor exposures to sediment are possible in Area 2.
	Groundwater	Groundwater	Water from upper aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with water.
				Construction Worker	Adult	Dermal	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), construction workers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), construction workers are not expected to have contact with water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected come into contact with upper aquifer water.
						Ingestion	On-site	None	Trespassers are not expected come into contact with upper aquifer water.
		Air	Vapors from upper aquifer	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), workers are not expected to have contact with vapors.
				Construction Worker	Adult	Inhalation	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), construction workers are not expected to have contact with vapors.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
						Ingestion	On-site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
				Construction Worker	Adult	Dermal	On-site	None	Construction workers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Construction workers are not expected come into contact with lower aquifer water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected come into contact with lower aquifer water.

TABLE 3-2

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 2) - Griffith, Indiana

File: table3_2.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Air	Vapors from lower aquifer	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	Quant	Routine workers and utility workers may come into contact with water vapors from onsite wells in the lower aquifer.
				Construction Worker	Adult	Inhalation	On-site	None	Construction workers are not expected come into contact with vapors from lower aquifer water.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from lower aquifer water.
	Air	Air	Vapor emissions from Area 3	Routine Worker	Adult	Inhalation	On-Site	Qual	Routine workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers maycome into contact with vapor emissions from Area 3 soil, but this pathway is not significant.
	Other	Soil	Buried Drums	Routine Worker / Utility Worker	Adult	Dermal	On-Site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable.
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable.
				Construction Worker	Adult	Dermal	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable.
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable.
						Ingestion	On-site	Qual	There is potential for rupture or explosion of buried drums and continuing uncontrolled chemical release. However, this pathway is not easily quantifiable.
		Air	Vapors from buried drums	Routine Worker	Adult	Inhalation	On-Site	Qual	Routine workers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers may come into contact with vapors from buried drums. However, this pathway is not easily quantifiable.

TABLE 3-3

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 3) - Griffith, Indiana

File: table3_3.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface soil	Surface Soil	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Utility Worker	Adult	Dermal	On-Site	Quant	Utility workers may be exposed to soil from 0-10 feet bgs.
						Ingestion	On-site	Quant	Utility workers may be exposed to soil from 0-10 feet bgs.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Utility Worker	Adult	Inhalation	On-Site	Quant	Utility workers may work in this area and come into contact with vapors/ particulates from surface soil.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with vapors/particulates from surface soil.
	Subsurface soil	Subsurface soil	Subsurface soil	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Although trespassers may gain access to the site, it is unlikely they will come into contact with subsurface soil.
						Ingestion	On-site	None	Although trespassers may gain access to the site, it is unlikely they will come into contact with subsurface soil.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Although trespassers may gain access to the site, it is unlikely they will come into contact with vapors/particulates from subsurface soil.

TABLE 3-3

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 3) - Griffith, Indiana

File: table3_3.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water from upper aquifer	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with upper aquifer.
						Ingestion	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with upper aquifer.
		Air	Vapors from upper aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with vapors/particulates from upper aquifer.
		Groundwater	Water from lower aquifer	Routine Worker	Adult	Dermal	On-Site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with lower aquifer.
	Air	Air	Vapor emissions from Area 2	Routine Worker	Adult	Inhalation	On-Site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespassers are likely come into contact with vapor emissions from Area 2 soil.

(((

TABLE 3-3

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 3) - Griffith, Indiana

File: table3_3.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface and subsurface soil	Surface and subsurface soil	Surface and subsurface soil	Routine Worker	Adult	Dermal	On-Site	Quant	Future workers may be exposed to surface and subsurface soil to a depth of 10 feet. It was assumed soiil to a two foot depth may be brought to the surface during utility maintenance and construction work and intermixed with the existing surface soil.
						Ingestion	On-site	Quant	Future workers may be exposed to surface and subsurface soil to a depth of 10 feet. It was assumed soiil to a two foot depth may be brought to the surface during utility maintenance and construction work and intermixed with the existing surface soil.
				Utility Worker	Adult	Dermal	On-site	Quant	Workers are assumed to be in contact with subsurface soils to a depth of 10 feet.
						Ingestion	On-site	Quant	Workers are assumed to be in contact with subsurface soils to a depth of 10 feet.
				Construction Worker	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0 - 4 feet bgs and work without personal protective equipment.
				(Slab on Grade)		Ingestion	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0 - 4 feet bgs and work without personal protective equipment.
				Construction worker (other)	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0-10 feet bgs and work without personal protective equipment.
						Ingestion	On-site	Quant	Construction workers are assumed to be in contact with subsurface soils 0-10 feet bgs and work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
						Ingestion	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
		Air	Vapors / Particulates	Routine Worker	Adult	Inhalation	On-Site	Quant	Routine workers are assumed to be in contact with vapors/particulates subsurface soils brought to the surface.
				Utility Worker	Adult	Inhalation	On-Site	Quant	Utility workers are assumed to be in contact with vapors/particulates subsurface soils brought to the surface.
				Construction Worker (Slab on grade)	Adult	Inhalation	On-site	Quant	Construction workers are assumed to be in contact with vapors/particulates from subsurface soils brought to the surface and work without personal protective equipment.
				Construction worker (other)	Adult	Inhalation	On-site	Quant	Construction workers are assumed to be in contact with vapors/particulates from subsurface soils brought to the surface and work without personal protective equipment.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.

TABLE 3-3

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 3) - Griffith, Indiana

File: table3_3.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Subsurface Soil	Air	Vapors / Particulates	Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespasser exposures are assumed to occur because soil currently below the surface may be moved to the surface during excavation activities.
	Groundwater	Groundwater	Water from upper aquifer	Routine Worker	Adult	Dermal	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), Routine workers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), Routine workers are not expected to have contact with water.
				Construction Worker	Adult	Dermal	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), construction workers are not expected to have contact with water.
						Ingestion	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), construction workers are not expected to have contact with water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected come into contact with upper aquifer water.
						Ingestion	On-site	None	Trespassers are not expected come into contact with upper aquifer water.
		Air	Vapors from upper aquifer	Routine Worker	Adult	Inhalation	On-Site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), Routine workers are not expected to have contact with vapors.
				Construction Worker	Adult	Inhalation	On-site	None	Due to the depth to the upper groundwater aquifer (10-16 feet), construction workers are not expected to have contact with vapors.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
						Ingestion	On-site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
				Construction Worker	Adult	Dermal	On-site	None	Construction workers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Construction workers are not expected come into contact with lower aquifer water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Routine Worker & Utility Worker	Adult	Inhalation	On-Site	Quant	Routine workers and utility workers may come into contact with water vapors from onsite wells in the lower aquifer.
				Construction Worker	Adult	Inhalation	On-site	None	Construction workers are not expected come into contact with vapors from lower aquifer water.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from lower aquifer water.

(((

TABLE 3-3

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 3) - Griffith, Indiana

File: table3_3.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Air	Air	Vapor emissions from Area 2	Routine Worker	Adult	Inhalation	On-Site	Qual	Workers are likely come into contact with vapor emissions from Area 2 soil, but this pathway is not significant.
				Construction Worker	Adult	Inhalation	On-site	Qual	Construction workers are likely come into contact with vapor emissions from Area 2 soil, but this pathway is not significant.
		Air	Vapor emissions from Area 2	Trespasser/Visitor	Adolescents	Inhalation	On-site	Qual	Trespassers maycome into contact with vapor emissions from Area 2 soil, but this pathway is not significant.

TABLE 3-4

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 4A) - Griffith, Indiana

File: table3_4.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Sediment/Surface Soil	Surface soil	Sediment/Surface Soil	Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
		Air	Vapors / Particulates	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Emission of vapors is expected to be primarily from surface water. Particulates are not expected due to the presence of surface water.
	Subsurface soil	Subsurface soil	Subsurface soil	Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with subsurface soil.
						Ingestion	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with subsurface soil.
		Air	Vapors / Particulates	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with vapors/particulates from subsurface soil.
	Groundwater	Groundwater	Water from upper aquifer	Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with upper aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with upper aquifer water.
		Air	Vapors from upper aquifer	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with vapors from lower aquifer water.
	Surface Water	Surface Water	Surface water in wetlands	Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers are likely to come into contact with surface water onsite.
						Ingestion	On-site	Quant	Trespassers are likely to come into contact with surface water onsite.
		Air	Vapors from surface water	Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespassers are likely come into contact with vapor emissions from surface water.
		Animal Tissue	Fish	Trespasser/Visitor	Adolescents	Ingestion	On-site	None	Wetlands in Area 4A do no support fish populations.

TABLE 3-4

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 4A) - Griffith, Indiana

File: table3_4.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Sediment/Surface Soil	Surface soil	Sediment/Surface Soil	Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with surface soil.
		Air	Vapors / Particulates	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Emission of vapors is expected to be primarily from surface water. Particulates are not expected due to the presence of surface water.
	Subsurface soil	Subsurface soil	Subsurface soil	Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with subsurface soil.
						Ingestion	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with subsurface soil.
		Air	Vapors / Particulates	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to dig more than 2 feet into the ground and come into contact with vapors/particulates from subsurface soil.
	Groundwater	Groundwater	Water from upper aquifer	Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with upper aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with upper aquifer water.
		Air	Vapors from upper aquifer	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with vapors from lower aquifer water.
	Surface Water	Surface Water	Surface water in wetlands	Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers are likely to come into contact with surface water onsite.
						Ingestion	On-site	Quant	Trespassers are likely to come into contact with surface water onsite.
		Air	Vapors from surface water	Trespasser/Visitor	Adolescents	Inhalation	On-site	Quant	Trespassers are likely to come into contact with vapor emissions from surface water.
		Animal Tissue	Fish	Trespasser/Visitor	Adolescents	Ingestion	On-site	None	Wetlands in Area 4A do no support fish populations.

TABLE 3-5

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 4B) - Griffith, Indiana

File: table3_5.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Sediment	Sediment	Sediment	Utility Worker	Adult	Dermal	On-site	Quant	Utility workers are expected to engage in activities that would place them in direct contact with sediment.
						Ingestion	On-site	Quant	Utility workers are expected to engage in activities that would place them in direct contact with sediment.
				Routine Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with sediment.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with sediment.
		Air	Vapors / Particulates	Utility Worker	Adult	Inhalation	On-site	None	Utility workers are assumed to be in contact with sediment; however, contact with vapor/particulate emissions is considered insignificant.
				Routine Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are assumed to be in contact with sediment; however, contact with vapor/particulate emissions is considered insignificant.
	Groundwater	Groundwater	Water from upper aquifer	Routine Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Utility Worker	Adult	Dermal	On-site	Quant	Utility workers are expected to engage in activities that would place them in contact with upper aquifer water.
						Ingestion	On-site	None	Utility workers are not expected to ingest water from the upper aquifer.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to come into contact with upper aquifer water.
						Ingestion	On-site	None	Trespassers are not expected to come into contact with upper aquifer water.

(((

TABLE 3-5

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 4B) - Griffith, Indiana

File: table3_5.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Air	Vapors from upper aquifer	Utility Worker	Adult	Inhalation	On-Site	Quant	Utility workers are assumed to work without personal protective equipment and may inhale vapors from upper aquifer water.
				Routine Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to come into contact with vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Routine Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Routine Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Inhalation	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from lower aquifer water.
	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Routine Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Construction Worker	Adult	Dermal	On-site	None	Current land use is vacant land.
						Ingestion	On-site	None	Current land use is vacant land.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers are likely to come into contact with surface water onsite.
						Ingestion	On-site	Quant	Trespassers are likely to come into contact with surface water onsite.
				Utility Worker	Adult	Dermal	On-site	Qual	Utility workers are expected to have minimal contact with surface water onsite.
						Ingestion	On-site	Qual	Utility workers are expected to have minimal contact with surface water onsite.

TABLE 3-5

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 4B) - Griffith, Indiana

File: table3_5.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Sediment	Sediment	Sediment	Routine Worker & Utility Worker	Adult	Dermal	On-site	Quant	Workers are assumed to be in this area of the site and exposed to sediment.
						Ingestion	On-site	Quant	Workers are assumed to be in this area of the site and exposed to sediment.
				Construction Worker (Slab on Grade)	Adult	Dermal	On-site	Quant	Construction workers are assumed to be in this area of the site and exposed to sediment.
						Ingestion	On-site	Quant	Construction workers are assumed to be in this area of the site and exposed to sediment.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with sediment.
						Ingestion	On-site	Quant	Trespassers may gain access to this area of the site and come into contact with sediment.
		Air	Vapors / Particulates	Routine / Utility Worker	Adult	Inhalation	On-Site	None	Workers are assumed to be in this area of the site and exposed to sediment; however, direct contact with vapor/particulate emissions is considered insignificant.
				Construction Worker	Adult	Inhalation	On-site	None	Construction workers are assumed to be in this area of the site and exposed to sediment; however, direct contact with vapor/particulate emissions is considered insignificant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are assumed to be in this area of the site and exposed to sediment; however, direct contact with vapor/particulate emissions is considered *insignificant*.
	Groundwater	Groundwater	Water from upper aquifer	Utility Worker	Adult	Dermal	On-site	Quant	Utility workers are expected to engage in activities that would place them in contact with upper aquifer groundwater.
						Ingestion	On-site	None	Utility workers are not expected to engage ingest upper aquifer groundwater.
				Construction Worker	Adult	Dermal	On-site	Quant	Construction workers are assumed to work without personal protective equipment and may contact upper aquifer water.
						Ingestion	On-site	None	Construction workers are not expected to ingest water from the upper aquifer.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected to engage in intrusive activities that would place them in contact with upper aquifer groundwater.
						Ingestion	On-site	None	Trespassers are not expected to engage in intrusive activities that would place them in contact with upper aquifer groundwater.
		Air	Vapors from upper aquifer	Utility Worker	Adult	Inhalation	On-site	Quant	Utility workers are assumed to inhale vapors from upper aquifer groundwater.
				Construction Worker	Adult	Inhalation	On-site	Quant	Construction workers are assumed to work without personal protective equipment and may inhale vapors from upper aquifer water.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected to be exposed to vapors from upper aquifer groundwater while onsite.

TABLE 3-5

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 4B) - Griffith, Indiana

File: table3_5.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Groundwater	Water from lower aquifer	Routine Worker & Utility Worker	Adult	Dermal	On-Site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
						Ingestion	On-site	Quant	Routine workers and utility workers may come into contact with water from onsite wells in the lower aquifer.
				Construction Worker	Adult	Dermal	On-site	None	Construction workers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Construction workers are not expected come into contact with lower aquifer water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
						Ingestion	On-site	None	Trespassers are not expected come into contact with lower aquifer water.
		Air	Vapors from lower aquifer	Routine Worker & Utility Worker	Adult	Inhalation	On-site	Quant	Routine workers and utility workers are assumed to inhale vapors associated with showering using lower aquifer groundwater.
				Construction Worker	Adult	Inhalation	On-site	None	Construction workers are not expected come into contact with vapors from lower aquifer water.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are not expected come into contact with vapors from lower aquifer water.
	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Routine Worker	Adult	Dermal	On-site	Quant	Routine workers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Routine workers are likely come into contact with surface water onsite.
				Construction Worker	Adult	Dermal	On-site	None	Construction workers are not expected to come into contact with onsite surface water.
						Ingestion	On-site	None	Construction workers are not expected to come into contact with onsite surface water.
				Trespasser/Visitor	Adolescents	Dermal	On-site	Quant	Trespassers are likely come into contact with surface water onsite.
						Ingestion	On-site	Quant	Trespassers are likely come into contact with surface water onsite.
		Air	Vapors from surface water	Routine Worker	Adult	Inhalation	On-site	None	Routine workers are likely to come into contact with surface water onsite; however, contact with vapors/emissions in this area are considered insignificant.
				Construction Worker	Adult	Inhalation	On-site	None	Construction workers are likely to come into contact with surface water onsite; however, contact with vapors/emissions in this area are considered insignificant.
				Trespasser/Visitor	Adolescents	Inhalation	On-site	None	Trespassers are likely to come into contact with surface water onsite; however, contact with vapors/emissions in this area are considered insignificant.

TABLE 3-6

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 5A) - Griffith, Indiana

File: table3_6.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface soil	Surface Soil	Resident	Adult	Dermal	Off-Site	Quant	Adult residents may have direct contact with surface soil.
						Ingestion	Off-Site	Quant	Adult residents may have direct contact with surface soil.
					Child	Dermal	Off-Site	Quant	Child residents may have direct contact with surface soil.
						Ingestion	Off-Site	Quant	Child residents may have direct contact with surface soil.
	Air	Air	Off-Site Areas	Resident	Adult	Inhalation	Off-Site	Quant	Adult residents may inhale vapors emitted from surface soil in Areas 2 and 3 and particulates from Areas 1, 2, 3, and 4B.
					Child	Inhalation	Off-Site	Quant	Child residents may inhale vapors emitted from surface soil in Areas 2 and 3 and particulates from Areas 1, 2, 3, and 4B.
	Subsurface soil	Subsurface soil	Subsurface soil	Resident	Adult	Dermal	Off-Site	None	Subsurface soil data does not exist.
						Ingestion	Off-Site	None	Subsurface soil data does not exist.
					Child	Dermal	Off-Site	None	Subsurface soil data does not exist.
						Ingestion	Off-Site	None	Subsurface soil data does not exist.
	Air	Air	Off-Site Areas	Resident	Adult	Inhalation	Off-Site	Quant	Adult residents may inhale vapors and particulates emitted from subsurface soil in Areas 2 and 3.
					Child	Inhalation	Off-Site	Quant	Child residents may inhale vapors and particulates emitted from subsurface soil in Areas 2 and 3.
	Groundwater	Groundwater	Water from upper aquifer	Resident	Adult	Dermal	Off-Site	Quant	Adult residents may have direct contact with upper aquifer water while washing cars or watering lawns assuming wells are installed in the upper aquifer.
						Ingestion	Off-Site	Quant	Adult residents may have direct contact with upper aquifer water while washing cars or watering lawns assuming wells are installed in the upper aquifer.
					Child	Dermal	Off-Site	Quant	Child residents may have direct contact with upper aquifer water while swimming assuming wells are installed in the upper aquifer.
						Ingestion	Off-Site	Quant	Child residents may have direct contact with upper aquifer water while swimming assuming wells are installed in the upper aquifer.

(((

TABLE 3-6

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 5A) - Griffith, Indiana

File: table3_6.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water from lower aquifer	Resident	Adult	Dermal	Off-Site	Quant	Adult residents adjacent to the site currently use wells installed in the lower aquifer for drinking and general household purposes.
						Ingestion	Off-Site	Quant	Adult residents adjacent to the site currently use wells installed in the lower aquifer for drinking and general household purposes.
					Child	Dermal	Off-Site	Quant	Child residents adjacent to the site currently use wells installed in the lower aquifer for drinking and general household purposes.
						Ingestion	Off-Site	Quant	Child residents adjacent to the site currently use wells installed in the lower aquifer for drinking and general household purposes.
		Air	Vapors from lower aquifer	Resident	Adult	Inhalation	Off-Site	Quant	Adult residents adjacent to the site currently use wells installed in the lower aquifer for drinking and general household purposes.
					Child	Inhalation	Off-Site	Quant	Child residents adjacent to the site currently use wells installed in the lower aquifer for drinking and general household purposes.
	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Resident	Adult	Dermal	Off-Site	None	Adult residents are not expected to have direct contact with surface water.
						Ingestion	Off-Site	None	Adult residents are not expected to have direct contact with surface water.
					Child	Dermal	Off-Site	None	Child residents are not expected to have direct contact with surface water.
						Ingestion	Off-Site	None	Child residents are not expected to have direct contact with surface water.
	Other	Soil	Garden fruits and vegetables	Resident	Adult	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to adult residents.
					Child	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to child residents.
Future	Surface soil	Surface soil	Surface Soil	Resident	Adult	Dermal	Off-Site	Quant	Adult residents may have direct contact with surface soil.
						Ingestion	Off-Site	Quant	Adult residents may have direct contact with surface soil.
					Child	Dermal	Off-Site	Quant	Child residents may have direct contact with surface soil.
						Ingestion	Off-Site	Quant	Child residents may have direct contact with surface soil.
	Air	Air	Vapor emissions from Area 2 and Area 3	Resident	Adult	Inhalation	Off-Site	Quant	Adult residents may inhale vapors emitted from surface soil in Areas 2 and 3.
					Child	Inhalation	Off-Site	Quant	Child residents may inhale vapors emitted from surface soil in Areas 2 and 3.

TABLE 3-6

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 5A) - Griffith, Indiana

File: table3_6.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Subsurface Soil	Subsurface soil	Subsurface soil	Resident	Adult	Dermal	Off-Site	None	No subsurface soil data exists.
						Ingestion	Off-Site	None	No subsurface soil data exists.
					Child	Dermal	Off-Site	None	No subsurface soil data exists.
						Ingestion	Off-Site	None	No subsurface soil data exists.
	Air	Air	Emissions from On-Site Areas	Resident	Adult	Inhalation	Off-Site	Quant	Adult residents may inhale vapors emitted from subsurface soil in Areas 2 and 3.
					Child	Inhalation	Off-Site	Quant	Child residents may inhale vapors emitted from subsurface soil in Areas 2 and 3.
	Groundwater	Groundwater	Water from upper aquifer	Resident	Adult	Dermal	Off-Site	Quant	Adult residents may use upper aquifer water for washing cars or watering lawns assuming wells are installed in the upper aquifer.
						Ingestion	Off-Site	Quant	Adult residents may use upper aquifer water for washing cars or watering lawns assuming wells are installed in the upper aquifer.
					Child	Dermal	Off-Site	Quant	Child residents may use upper aquifer water for swimming assuming wells are installed in the upper aquifer.
						Ingestion	Off-Site	Quant	Child residents may use upper aquifer water for swimming assuming wells are installed in the upper aquifer.
			Water from lower aquifer	Resident	Adult	Dermal	Off-Site	Quant	Adult residents adjacent to the site are assumed to use wells installed in the lower aquifer for drinking and general household purposes. Data from lower aquifer wells are used to estimate exposure, and data from upper aquifer wells will be used as a bounding estimate.
						Ingestion	Off-Site	Quant	Adult residents adjacent to the site are assumed to use wells installed in the lower aquifer for drinking and general household purposes. Data from lower aquifer wells are used to estimate exposure, and data from upper aquifer wells will be used as a bounding estimate.
					Child	Dermal	Off-Site	Quant	Child residents adjacent to the site are assumed to use wells installed in the lower aquifer for drinking and general household purposes. Data from lower aquifer wells are used to estimate exposure, and data from upper aquifer wells will be used as a bounding estimate.
						Ingestion	Off-Site	Quant	Child residents adjacent to the site are assumed to use wells installed in the lower aquifer for drinking and general household purposes. Data from lower aquifer wells are used to estimate exposure, and data from upper aquifer wells will be used as a bounding estimate.

TABLE 3-6

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 5A) - Griffith, Indiana

File: table3_6.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Air	Vapors from lower aquifer	Resident	Adult	Inhalation	Off-Site	Quant	Adult residents adjacent to the site are assumed to use wells installed in the lower aquifer for drinking and general household purposes. Data from lower aquifer wells are used to estimate exposure, and data from upper aquifer wells will be used as a bounding estimate.
					Child	Inhalation	Off-Site	Quant	Child residents adjacent to the site are assumed to use wells installed in the lower aquifer for drinking and general household purposes. Data from lower aquifer wells are used to estimate exposure, and data from upper aquifer wells will be used as a bounding estimate.
	Surface Water	Surface Water	Pond, Drainage ditch, Puddles	Resident	Adult	Dermal	Off-Site	None	Adult residents are not expected to have direct contact with surface water.
						Ingestion	Off-Site	None	Adult residents are not expected to have direct contact with surface water.
					Child	Dermal	Off-Site	None	Child residents are not expected to have direct contact with surface water.
						Ingestion	Off-Site	None	Child residents are not expected to have direct contact with surface water.
	Other	Soil	Garden fruits and vegetables	Resident	Adult	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to adult residents.
					Child	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to child residents.

TABLE 3-7

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 5B) - Griffith, Indiana

File: table3_7.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater	Groundwater	Water from upper aquifer	Construction Worker	Adult	Dermal	Off-Site	None	The current land use is vacant land.
						Ingestion	Off-Site	None	The current land use is vacant land.
		Air	Vapors from upper aquifer	Construction Worker	Adult	Inhalation	Off-Site	None	The current land use is vacant land.
		Groundwater	Water from lower aquifer	Commercial Worker	Adult	Dermal	Off-Site	None	There are no commercial workers using groundwater currently in this area of the site.
						Ingestion	Off-Site	None	There are no commercial workers using groundwater currently in this area of the site.
		Air	Vapors from lower aquifer	Commercial Worker	Adult	Inhalation	Off-Site	None	There are no commercial workers using groundwater currently in this area of the site.
Future	Groundwater	Groundwater	Water from upper aquifer	Construction Worker	Adult	Dermal	Off-Site	Quant	Construction workers are assumed to work without personal protective equipment and may contact upper aquifer water.
						Ingestion	Off-Site	None	Construction workers are not expected to ingest water from the upper aquifer.
		Air	Vapors from upper aquifer	Construction Worker	Adult	Inhalation	Off-Site	Quant	Construction workers are assumed to work without personal protective equipment and may inhale vapors from upper aquifer water.
		Groundwater	Water from lower aquifer	Commercial Worker	Adult	Dermal	Off-Site	Quant	Future commercial uses of lower aquifer (car wash, etc.) are possible.
						Ingestion	Off-Site	None	Future commercial users are not expected to use groundwater for ingestion.
		Air	Vapors from lower aquifer	Commercial Worker	Adult	Inhalation	Off-Site	Quant	Future commercial uses of lower aquifer (car wash, etc.) are possible.

TABLE 3-8

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 6) - Griffith, Indiana

File: table3_8.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Sediment	Sediment	Sediment	Resident	Adult	Dermal	Off-Site	Quant	Adult residents could have direct contact with sediment that washes from Area 4A.
						Ingestion	Off-Site	Quant	Adult residents could have direct contact with sediment that washes from Area 4A.
					Child	Dermal	Off-Site	Quant	Child residents could have direct contact with sediment that washes from Area 4A.
						Ingestion	Off-Site	Quant	Child residents could have direct contact with sediment that washes from Area 4A.
		Air	Vapors from sediment	Resident	Adult	Inhalation	Off-Site	None	The inhalation of vapors emitted from sediment in Area 4A is expected to be insignificant to Area 6 residents.
					Child	Inhalation	Off-Site	None	The inhalation of vapors emitted from sediment in Area 4A is expected to be insignificant to Area 6 residents.
	Surface Water	Surface Water	Stream	Resident	Adult	Dermal	Off-Site	Qual	Adult residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
						Ingestion	Off-Site	Qual	Adult residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
					Child	Dermal	Off-Site	Qual	Child residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
						Ingestion	Off-Site	Qual	Child residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
		Air	Vapors from surface water	Resident	Adult	Inhalation	Off-Site	None	The inhalation of vapors emitted from surface water in Area 4A is expected to be insignificant to Area 6 residents.
					Child	Inhalation	Off-Site	None	The inhalation of vapors emitted from surface water in Area 4A is expected to be insignificant to Area 6 residents.
	Other	Soil	Garden fruits and vegetables	Resident	Adult	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to adult residents.
					Child	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to child residents.
Future	Sediment	Sediment	Sediment	Resident	Adult	Dermal	Off-Site	Quant	Adult residents could have direct contact with sediment that washes from Area 4A.
						Ingestion	Off-Site	Quant	Adult residents could have direct contact with sediment that washes from Area 4A.
					Child	Dermal	Off-Site	Quant	Child residents could have direct contact with sediment that washes from Area 4A.
						Ingestion	Off-Site	Quant	Child residents could have direct contact with sediment that washes from Area 4A.
		Air	Vapors from sediment	Resident	Adult	Inhalation	Off-Site	None	The inhalation of vapors emitted from sediment in Area 4A is expected to be insignificant to Area 6 residents.
					Child	Inhalation	Off-Site	None	The inhalation of vapors emitted from sediment in Area 4A is expected to be insignificant to Area 6 residents.

TABLE 3-8

SELECTION OF EXPOSURE PATHWAYS

American Chemical Services Site (Area 6) - Griffith, Indiana

File: table3_8.WK4

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Water	Surface Water	Stream	Resident	Adult	Dermal	Off-Site	Qual	Adult residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
						Ingestion	Off-Site	Qual	Adult residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
					Child	Dermal	Off-Site	Qual	Child residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
						Ingestion	Off-Site	Qual	Child residents are likely to have direct contact with surface water; however, the surface water is not contaminated.
		Air	Vapors from surface water	Resident	Adult	Inhalation	Off-Site	None	The inhalation of vapors emitted from surface water in Area 4A is expected to be insignficant to Area 6 residents.
					Child	Inhalation	Off-Site	None	The inhalation of vapors emitted from surface water in Area 4A is expected to be insignficant to Area 6 residents.
	Other	Soil	Garden fruits and vegetables	Resident	Adult	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to adult residents.
					Child	Ingestion	Off-Site	None	This pathway is not considered to pose a substantial risk to child residents.

(((

Table 3-9
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Area 2, Soil
Receptor Population: Trespasser
Receptor Age: Adolescent

File: TARA3_10.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	50	USEPA 1991, 97 (1)	25	USEPA 1991, 97 (2)	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	USEPA 1993	2	USEPA 1993	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	4,400	USEPA 1992	3,600	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	USEPA 1993	2	USEPA 1993	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	2,129	USEPA, 1991	183	USEPA, 1991	

(1) Assume a Prorated Ingestion Rate for soil and sediment in Area 2. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that a trespasser ingests a total of 50 mg of soil per day.

(2) Assume a Prorated Ingestion Rate for soil and sediment in Area 2. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that a trespasser ingests a total of 25 mg of soil per day.

(3) Assume 1 day/week in April, May, Sept, Oct, and 3 days/week in June, July, and August.

(4) Assume 1 day/week in June, July, and August.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-10
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Area 3, Soil
Receptor Population: Trespasser
Receptor Age: Adolescent

File: TARA3_10.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	100	USEPA 1991, 97 (1)	50	USEPA 1991, 97 (1)	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	--	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	54	(2)	12	(3)	
	ED	Exposure Duration	years	10	USEPA 1993	2	USEPA 1993	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	4,400	USEPA 1992	3,600	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	54	(2)	12	(3)	
	ED	Exposure Duration	years	10	USEPA 1993	2	USEPA 1993	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	2,129	USEPA, 1991	183	USEPA, 1991	

(1) No sediment in Area 3; therefore, the soil ingestion rate in this area was not prorated.

(2) Assume 1 day/week in April, May, Sept, Oct, and 3 days/week in June, July, and August.

(3) Assume 1 day/week in June, July, and August.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-11
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Area 1, Soil
Receptor Population: Trespasser
Receptor Age: Adolescent

File: TARA3_16.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	50	USEPA 1991, 97, (1)	25	SEPA 1991, 97, (2)	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	USEPA 1993	2	USEPA 1993	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	4,400	USEPA 1992	3,600	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	USEPA 1993	2	USEPA 1993	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	2,129	USEPA, 1991	183	USEPA, 1991	

(1) Assume a Prorated Ingestion Rate for soil and sediment in Area 1. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that a trespasser ingests a total of 50 mg of soil per day.

(2) Assume a Prorated Ingestion Rate for soil and sediment in Area 1. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that a trespasser ingests a total of 25 mg of soil per day.

(3) Assume 1 day/week in April, May, Sept, Oct, and 3 days/week in June, July, and August.

(4) Assume 1 day/week in June, July, and August.

Source:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-12
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 2, Soil
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	COPC Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/hr in day	2/24	(1)	1/24	(2)	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	BW	Body Weight	kg	50	USEPA 1997	50	USEPA 1997	
	AT-C	Averaging Time (cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) Assume that one-half of a trespasser's exposure time while in Area 2 is in soil and the other half is in sediment. Therefore, assume that the trespasser contacts soil a total of 2 hrs/day.

(2) Assume that one-half of a trespasser's exposure time while in Area 2 is in soil and the other half is in sediment. Therefore, assume that the trespasser contacts soil a total of 1 hr/day.

(3) Assume 1 day/week in April, May, September, October, and 3 days/week in June, July, and August.

(3) Assume 1 day/week in June, July, and August.

(5) Professional Judgment.

Sources:

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1997: Exposure Factors Handbook. August

Table 3-13
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 3, Soil
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	COPC Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/hr in day	4/24	(1)	2/24	(1)	
	EF	Exposure Frequency	days/year	54	(1)	12	(1)	
	ED	Exposure Duration	years	10	(2)	2	(2)	
	BW	Body Weight	kg	50	USEPA 1997	50	USEPA 1997	
	AT-C	Averaging Time (cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) USEPA Region V Standard default trespasser scenario.

(2) Professional Judgment.

Sources:

USEPA, 1991: *Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final.* OSWER Directive 9285.6-03, March 15.

USEPA, 1997: Exposure Factors Handbook. August

Table 3-14
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 1, Soil
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/hr in day	2/24	(1)	1/24	(2)	
	EF	Exposure Frequency	days/year	54	(3)	12	(3)	
	ED	Exposure Duration	years	10	(4)	2	(4)	
	BW	Body Weight	kg	50	USEPA 1997	50	USEPA 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) Assume that one-half of a trespasser's exposure time while in Area 1 is in soil and the other half is in sediment. Therefore, assume that the trespasser contacts soil a total of 2 hrs/day.

(2) Assume that one-half of a trespasser's exposure time while in Area 1 is in soil and the other half is in sediment. Therefore, assume that the trespasser contacts soil a total of 1 hr/day.

(3) USEPA Region V Standard default trespasser scenario.

(4) Professional Judgment.

Sources:

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1997: Exposure Factors Handbook. August

Table 3-15
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 2, Sediment
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_32.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	50	USEPA 1991 (1)	25	USEPA 1991 (2)	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm²/event	4,400	USEPA 1992	3,600	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm²-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) Assume a Prorated Ingestion Rate for soil and sediment in Area 2. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that the trespasser ingests a total of 50 mg of sediment per day.

(2) Assume a Prorated Ingestion Rate for soil and sediment in Area 2. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, asume that the trespasser ingests a total of 25 mg of sediment per day.

(3) Assume one day per week in April, May, September and October and three days per week during June, July and August.

(4) Assume one day per week in June, July, and August.

(5) Professional judgment.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-16
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 4A and 4B, Sediment
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_35.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA 1991 (1)	50	USEPA 1991 (1)	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	54	(2)	12	(3)	
	ED	Exposure Duration	years	10	(4)	2	(4)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm^2/event	4,400	USEPA 1992	3,600	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	54	(2)	12	(3)	
	ED	Exposure Duration	years	10	(4)	2	(4)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) No soil samples in Area 4A or 4B; therefore, the sediment ingestion rate in these ares was not prorated.

(2) Assume one day per week in April, May, September and October and three days per week in June, July and August.

(3) Assume one day per week in June, July, and August.

(4) Professional judgment.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment: Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-17
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 1, Sediment
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_29.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	50	USEPA 1991 (1)	25	USEPA 1991 (2)	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm²/event	4,400	USEPA 1992	3,600	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm²-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	54	(3)	12	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) Assume a Prorated Ingestion Rate for soil and sediment in Area 1. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that the trespasser will ingest a total of 50 mg of sediment per day.

(2) Assume a Prorated Ingestion Rate for soil and sediment in Area 1. Assume that one-half of the exposure time is in soil and the other half is in sediment. Therefore, assume that the trespasser will ingest a total of 25 mg of sediment per day.

(3) Assume one day per week in April, May, September and October and three days per week in June, July and August.

(4) Assume one day per week in June, July, and August.

(5) Professional judgment.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: *Dermal Exposure Assessment : Principles and Applications.* Interim Report. EPA/600/8-91/011B.

Table 3-18
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area 2, Surface Water
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_38.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	CR	Contact Rate	L/hr	0.05	USEPA 1989	0.05	USEPA 1989	CW x CR x ET x EF x ED x 1 /BW x 1/AT
	ET	Exposure Time	hr/day	2	(1)	1	(2)	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	
Dermal	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	ET	Exposure Time	hr/day	2	(1)	1	(2)	CW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	chemical specific		chemical specific		
	SA	Skin Surface Area Available for Contact	cm2	4,400	USEPA 1992	3,600	USEPA 1992	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(5)	
	CF	Conversion Factor	L/cm3	0.001	USEPA 1989	0.001	USEPA 1989	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	USEPA 1991	183	USEPA 1991	

(1) Assume that one-half of the exposure time in Area 2 is in soil and the other half is in surface water. Therefore, assume that the trespasser will contact surface water for 2 hr/day.

(2) Assume that one-half of the exposure time in Area 2 is in soil and the other half is in surface water. Therefore, assume that the trespasser will contact surface water for 1 hr/day.

(3) Assume once a week in June, July, and august.

(4) Assume once a month in June, July, and August.

(5) Professional judgment.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-19
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Areas 4A and 4B, Surface Water
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_41.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	CR	Contact Rate	L/hr	0.05	USEPA 1989	0.05	USEPA 1989	CW x CR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/day	4	(1)	2	(2)	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(6)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	(7)	183	(8)	
Dermal	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	ET	Exposure Time	hr/day	2	(1)	1	(2)	CW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	chemical specific		chemical specific		
	SA	Skin Surface Area Available for Contact	cm2	4,400	USEPA 1992	3,600	USEPA 1992	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(6)	
	CF	Conversion Factor	L/cm3	0.001	USEPA 1989	0.001	USEPA 1989	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	(7)	183	(8)	

(1) Assume that the trespasser will contact surface water in Areas 4A and 4B for 4 hours/day since surface soil is not evaluated in these areas.

(2) Assume that the trespasser will contact surface water in Areas 4A and 4B for 2 hours/day since surface soil is not evaluated in these areas.

(3) Assume once a week during the summer months.

(4) Assume once a month during the summer months.

(5) Assume 10 years based on the total years in the 9-18 year old age group.

(6) The CT exposure is assumed to be much less than the RME exposure. In addition the availability of nearby recreational areas makes trespassing at the site less likely.

(7) Assume to occur 7 months out of the year for 10 years.

(8) Assume to occur 3 months out of the year for 2 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-19A
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: Area 4A, Surface Water
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_43.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CW	COPC Concentration in Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	CW x K x IR x ET x EF x ED x 1/BW x 1/AT
	IR	Inhalation Rate	m3/hr	0.83	USEPA 1991	0.83	USEPA 1991	
	ET	Exposure Time	hr/day	4	(1)	2	(2)	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(6)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	(7)	183	(8)	

(1) Assume that the trespasser will contact surface water in Area 4A for 4 hours/day since surface soil is not evaluated in these areas.

(2) Assume that the trespasser will contact surface water in Area 4A for 2 hours/day since surface soil is not evaluated in these areas.

(3) Assume once a week during the summer months.

(4) Assume once a month during the summer months.

(5) Assume 10 years based on the total years in the 9-18 year old age group.

(6) The CT exposure is assumed to be much less than the RME exposure. In addition the availability of nearby recreational areas makes trespassing at the site less likely.

(7) Assume to occur 7 months out of the year for 10 years.

(8) Assume to occur 3 months out of the year for 2 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1. Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-20
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area 1, Surface Water
Receptor Population: Trespasser
Receptor Age: Adolescent

File: tara3_38.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	CR	Contact Rate	L/hr	0.05	USEPA 1989	0.05	USEPA 1989	CW x CR x ET x EF x ED x 1 /BW x 1/AT
	ET	Exposure Time	hr/day	2	(1)	1	(2)	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(6)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	(7)	183	(8)	
Dermal	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	ET	Exposure Time	hr/day	2	(1)	1	(2)	CW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	chemical specific		chemical specific		
	SA	Skin Surface Area Available for Contact	cm2	4,400	USEPA 1992	3,600	USEPA 1992	
	EF	Exposure Frequency	days/year	12	(3)	3	(4)	
	ED	Exposure Duration	years	10	(5)	2	(6)	
	CF	Conversion Factor	L/cm3	0.001	USEPA 1989	0.001	USEPA 1989	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	2,129	(7)	183	(8)	

(1) Assume that one-half of the exposure time is in soil and the other half is in surface water. Therefore, assume that the trespasser will contact surface water for 2 hr/day.

(2) Assume that one-half of the exposure time is in soil and the other half is in surface water. Therefore, assume that the trespasser will contact surface water for 1 hr/day.

(3) Assume once a week during the summer months.

(4) Assume once a month during the summer months.

(5) Assume 10 years based on the total years in the 9-18 year old age group.

(6) The CT exposure is assumed to be much less than the RME exposure. In addition the availability of nearby recreational areas makes trespassing at the site less likely.

(7) Assume to occur 7 months out of the year for 10 years.

(8) Assume to occur 3 months out of the year for 2 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-21
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area 1, Surface Soil (0' to 2')
Receptor Population: Routine worker
Receptor Age: Adult

File: TARA3_13.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	87.5	USEPA 1991, 97	43.75	USEPA 1991, 97	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1991	1,825	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	9,125	USEPA, 1991	1,825	USEPA, 1991	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-22
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 1, Surface Soil (0' to 2')
Receptor Population: Routine worker
Receptor Age: Adult

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/8-hr workday	7/8	USEPA 1991, (1)	7/8	USEPA 1991, (1)	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

(1) Assume worker is in contact with soil for 7 hours out of the 8-hour workday (see Section 3.4.8.1).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

Table 3-23
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Area 3, Soil (0' to 10')
Receptor Population: Routine worker
Receptor Age: Adult

File: TARA3_9.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate of Soil	mg/day	100	USEPA 1991, 97	50	USEPA 1991, 97	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1991	1,825	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	250	USEPA 1993	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	9,125	USEPA, 1991	1,825	USEPA, 1991	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-24
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 3, Soil (0' to 10')
Receptor Population: Routine worker
Receptor Age: Adult

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/8-hr workday	8/8	USEPA 1991, (1)	8/8	USEPA 1991, (1)	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

(1) Assume worker is in contact with soil for 8 hours of the 8-hour workday since there is no sediment evaluated in this area.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

Table 3-25
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Area 2, Soil (2' to 10')
Receptor Population: Routine worker
Receptor Age: Adult

File: TARA3_13.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	87.5	USEPA 1991, 97	43.75	USEPA 1991, 97	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1991	1,825	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	9,125	USEPA, 1991	1,825	USEPA, 1991	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-26
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 2, Soil (2' to 10')
Receptor Population: Routine worker
Receptor Age: Adult

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/8-hr workday	7/8	USEPA 1991, (1)	7/8	USEPA 1991, (1)	
	EF	Exposure Frequency	days/year	250	USEPA 1991	219	USEPA 1991	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

(1) Assume worker is in contact with soil for 7 hours of the 8-hour workday (see Section 3.4.8.1).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

Table 3-27
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 1, Sediment
Receptor Population: Routine Worker
Receptor Age: Adult

File: tara3_29.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	12.5	USEPA 1991	6.25	USEPA 1991	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	(1)	219	(2)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	(3)	1,825	(4)	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	(1)	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm^2/event	5,800	USEPA 1992	5,000		
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	250	(1)	219	(2)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1993	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	(3)	1,825	(4)	

(1) Based on a five-day work week for 50 weeks per year.

(2) Based on an average for all full-time and part-time workers (USEPA, 1993).

(3) Assume 365 days per year for 25 years.

(4) Assume 365 days per year for 5 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA 1993: Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

Table 3-28
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 2, Sediment (Ditch)
Receptor Population: Routine Worker
Receptor Age: Adult

File: tara3_29.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	12.5	USEPA 1991	6.25	USEPA 1991	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	(1)	219	(2)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	(3)	1,825	(4)	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	(1)	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm²/event	5,800	USEPA 1992	5,000		
	AF	Soil to Skin Adherence Factor	mg/cm²-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	250	(1)	219	(2)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1993	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	(3)	1,825	(4)	

(1) Based on a five-day work week for 50 weeks per year.

(2) Based on an average for all full-time and part-time workers (USEPA, 1993).

(3) Assume 365 days per year for 25 years.

(4) Assume 365 days per year for 5 years.

Sources:

USEPA 1989. Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991. Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992. Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B

USEPA 1993. Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

Table 3-29
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 4B, Sediment
Receptor Population: Routine Worker
Receptor Age: Adult

File: tara3_32.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA 1991	50	USEPA 1991	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	(1)	219	(2)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	(3)	1,825	(4)	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm^2/event	5,800	USEPA 1992	5,000		
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	250	(1)	219	(2)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1993	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

(1) Based on a 5-day work week for 50 weeks per year.

(2) Based on an average for all full-time and part-time workers (USEPA 1993).

(3) Assume 365 days per year for 25 years.

(3) Assume 365 days per year for 5 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment: Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA 1993: Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

(((

Table 3-30
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area 1, Surface Water (Fire Pond)
Receptor Population: Routine Worker
Receptor Age: Adult

File: tara3_38.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	CR	Contact Rate	L/hr	0.05	USEPA 1989	0.05	USEPA 1989	CW x CR x ET x EF x ED x 1 /BW x 1/AT
	ET	Exposure Time	hr/day	1	(1)	1	(1)	
	EF	Exposure Frequency	days/year	12	(2)	3	(3)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,825	(4)	456	(4)	
Dermal	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	ET	Exposure Time	hr/day	1	(1)	1	(1)	CW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	chemical specific		chemical specific		
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	EF	Exposure Frequency	days/year	12	(2)	3	(3)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	CF	Conversion Factor	L/cm3	0.001	USEPA 1989	0.001	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,825	(4)	456	(4)	

(1) Assume that the worker will contact surface water for 1 hr/day.

(2) Assume once a week during the summer months.

(3) Assume once a month during the summer months.

(4) Assume to occur 3 months out of the year.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA 1993: Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

Table 3-31
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area 2, Surface Water (Ditch)
Receptor Population: Routine Worker
Receptor Age: Adult

File: tara3_41.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	CR	Contact Rate	L/hr	0.05	USEPA 1989	0.05	USEPA 1989	CW x CR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/day	1	(1)	1	(1)	
	EF	Exposure Frequency	days/year	12	(2)	3	(3)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,825	(4)	456	(4)	
Dermal	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	ET	Exposure Time	hr/day	1	(1)	1	(1)	CW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	chemical specific		chemical specific		
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	EF	Exposure Frequency	days/year	12	(2)	3	(3)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	CF	Conversion Factor	L/cm3	0.001	USEPA 1989	0.001	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,825	(4)	456	(4)	

(1) Assume that the worker will contact surface water for 1 hr/day.

(2) Assume once a week during the summer months.

(3) Assume once a month during the summer months.

(4) Assume to occur 3 months out of the year.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA 1993: Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

Table 3-32
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area 4B, Surface Water
Receptor Population: Routine Worker
Receptor Age: Adult

ERR

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	CR	Contact Rate	L/hr	0.05	USEPA 1989	0.05	USEPA 1989	CW x CR x ET x EF x ED x 1 /BW x 1/AT
	ET	Exposure Time	hr/day	1	(1)	1	(1)	
	EF	Exposure Frequency	days/year	12	(2)	3	(3)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,825	(4)	456	(4)	
Dermal	CW	COPC Concentration in Surface Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	ET	Exposure Time	hr/day	1	(1)	1	(1)	CW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	chemical specific		chemical specific		
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	EF	Exposure Frequency	days/year	12	(2)	3	(3)	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	CF	Conversion Factor	L/cm3	0.001	USEPA 1989	0.001	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,825	(4)	456	(4)	

(1) Assume that the worker will contact surface water for 1 hr/day.
(2) Assume once a week during the summer months.
(3) Assume once a month during the summer months.
(4) Assume to occur 3 months out of the year.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.
USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.
USEPA 1993: Preliminary Review Draft, Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

Table 3-33
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Lower Aquifer
Exposure Point: Area 1, Groundwater (Tapwater)
Receptor Population: Worker *
Receptor Age: Adult

ile: TARA3_54.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate	L-water/day	1.4	USEPA 1993	1	USEPA 1993	CW x IR x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	
Dermal Contact (bathing/shower)	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	L/cm2	0.001	USEPA 1989	0.001	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	23000	USEPA 1992	20000	USEPA 1992	
	Kp	Permeability	cm/hr	chem-spec		chem-spec		
	ET	Exposure Time	hr/day	0.33	USEPA 1992	0.17	USEPA 1992	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

* Worker - Includes routine and utility maintenance workers.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-34
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Lower Aquifer
Exposure Point: Area 1, 2, 3, 4B, Groundwater (Tapwater)
Receptor Population: Worker *
Receptor Age: Adult

ile: TARA3_54.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate	L-water/day	1.4	USEPA 1993	1	USEPA 1993	CW x IR x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	
Dermal Contact (bathing/shower)	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	L/cm2	0.001	USEPA 1989	0.001	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	23000	USEPA 1992	20000	USEPA 1992	
	Kp	Permeability	cm/hr	chem-spec		chem-spec		
	ET	Exposure Time	hr/day	0.33	USEPA 1992	0.17	USEPA 1992	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

* Worker - Includes routine and utility maintenance workers.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-35
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Ambient Air (volatilization of VOCs from indoor water use)
Exposure Point: Area 1, Groundwater
Receptor Population: Worker *
Receptor Age: Adult

ile: TARA3_55.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CW	COPC Concentration in Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg - day)=
	IR	Inhalation Rate	m3/hr	2.5	USEPA 1991	2.5	USEPA 1991	CW x IR x K x FC x ET x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	unitless	1	USEPA 1989	1	USEPA 1989	
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	
	ET	Exposure Time	hr/day	0.33	USEPA 1997	0.17	USEPA 1997	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

* Worker - Includes routine and utility maintenance workers.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

Table 3-36
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Ambient air (volatilization of VOCs from indoor water use)
Exposure Point: Areas 1, 2, 3, 4B, Groundwater
Receptor Population: Worker *
Receptor Age: Adult

ile: TARA3_55.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CW	COPC Concentration in Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg - day)=
	IR	Inhalation Rate	m3/hr	2.5	USEPA 1991	2.5	USEPA 1991	CW x IR x K x FC x ET x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	unitless	1	USEPA 1989	1	USEPA 1989	
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	
	ET	Exposure Time	hr/day	0.33	USEPA 1997	0.17	USEPA 1997	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

* Worker - Includes routine and utility maintenance worker.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

Table 3-37
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Areas 1, 2, and 3, Soil
Receptor Population: Utility Worker
Receptor Age: Adult

File: TARA3_14.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	115.2	USEPA 1991, 93, (1)	51.14	USEPA 1991, 93, (2)	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1991	25	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1989	5,000	USEPA 1989	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1991	chemical-specific	USEPA 1991	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	9,125	USEPA, 1991	1,825	USEPA, 1991	

Sources:

(1) Assume Prorated Ingestion Rate of 100 mg/day for 240 days/year + 480 mg/day for 10 days/year

(2) Assume Prorated Ingestion Rate of 50 mg/day for 214 days/year + 100 mg/day for 5 days/year

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-38
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/Particulates)]
Exposure Point: Areas 1, 2, and 3, Soil
Receptor Population: Utility Worker
Receptor Age: Adult

ile: TARA3_27.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/8-hr workday	8/8	USEPA 1989, (1)	8/8	USEPA 1989, (1)	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1993: OSWER *Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME*. May 5, Nov. 4

(1) Assume a utility worker is in contact with soil for 8 hours of 8-hour workday in Areas 1, 2, and 3.

Table 3-39
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 4B, Sediment (Creek)
Receptor Population: Utility Worker
Receptor Age: Adult

File: tara3_29.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	115.2	USEPA 1991, 93, (1)	51.14	USEPA 1991, 93, (2)	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm^2/event	5,800	USEPA 1992	5,000	USEPA 1989	
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1993	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1993	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

Sources:

(1) Assume Prorated Ingestion Rate of 100 mg/day for 240 days/year + 480 mg/day for 10 days/year

(2) Assume Prorated Ingestion Rate of 50 mg/day for 214 days/year + 100 mg/day for 5 days/year

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

(((

Table 3-40
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Areas 1 and 4B, Groundwater
Receptor Population: Utility Worker
Receptor Age: Adult

ile: TARA3_51.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal Contact	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	L/cm2	1E-003	USEPA 1989	1E-03	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	Kp	Permeability	cm/hr	chem-spec		chem-spec		
	ET	Exposure Time	hr/day	8	(1)	8	(1)	
	EF	Exposure Frequency	days/year	10	(ENVIRON, 1998)	5	(ENVIRON, 1998)	
	ED	Exposure Duration	years	25	USEPA 1991	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	
Inhalation	CW	COPC Concentration in Water	mg/L	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CW x IR x FC x K x ET x EF x ED x 1/BW x 1/AT
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	
	ET	Exposure Time	hr/hr in a day	8/8	(1)	8/8	(1)	
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	10	(ENVIRON, 1998)	5	(ENVIRON, 1998)	
	ED	Exposure Duration	years	25	USEPA 1991	5	USEPA 1993	
	BW	Body Weight	kg	70	USEPA 1997	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

(1) Assume workday of 8 hrs.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook, August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

ENVIRON, 1998: Revised Baseline Risk Assessment, American Chemical Service NPL Site, September 1998.

Table 3-41
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Areas 1, 2, and 3, Soil
Receptor Population: Construction worker
Receptor Age: Adult

File: TARA3_15.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables			Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	480	USEPA 1991, 93			CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989			
	FI	Fraction Ingested	- -	1	USEPA 1989			
	EF	Exposure Frequency	days/year	196	(1)			
	ED	Exposure Duration	years	1	(1)			
	BW	Body Weight	kg	70	USEPA 1989			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991			
	AT-N	Averaging Time (Non-cancer)	days	274	USEPA 1991			
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables			CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992			CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992			
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1998a, b			
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b			
	EF	Exposure Frequency	days/year	196	(1)			
	ED	Exposure Duration	years	1	(1)			
	BW	Body Weight	kg	70	USEPA 1989			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991			
	ATn	Averaging Time (Non-cancer)	days	274	USEPA, 1991			

Sources:

(1) Assume 5 days/week for nine months

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-42
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (volatilization of VOCs)]
Exposure Point: Area 1, 2, and 3, Soil
Receptor Population: Construction Worker
Receptor Age: Adult

File: TARA3_28.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables			Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	30	USEPA 1991 (1)			CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/hr in day	8/8	(2)			
	EF	Exposure Frequency	days/year	196	(3)			
	ED	Exposure Duration	years	1	(3)			
	BW	Body Weight	kg	70	USEPA 1997			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991			
	AT-N	Averaging Time (Non-cancer)	days	274	USEPA 1991			

(1) Due to intensive activity, assume the RME inhalation rate for an adult.

(2) Assume 8 hour work day

(3) Assume 5 days/week for nine months

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol. 1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15

Table 3-43
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Areas 4B, Sediment
Receptor Population: Construction worker
Receptor Age: Adult

File: TARA3_15.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables			Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Sediment	mg/day	480	USEPA 1991, 93			CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989			
	FI	Fraction Ingested	- -	1	USEPA 1989			
	EF	Exposure Frequency	days/year	196	(1)			
	ED	Exposure Duration	years	1	(1)			
	BW	Body Weight	kg	70	USEPA 1989			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991			
	AT-N	Averaging Time (Non-cancer)	days	274	USEPA 1991			
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables			CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992			CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992			
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1998a, b			
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b			
	EF	Exposure Frequency	days/year	196	(1)			
	ED	Exposure Duration	years	1	(1)			
	BW	Body Weight	kg	70	USEPA 1989			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991			
	ATn	Averaging Time (Non-cancer)	days	274	USEPA, 1991			

Sources:

(1) Assume 5 days/week for nine months

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-44
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Upper Aquifer
Exposure Point: Area 1, 4B, and 5B, Groundwater
Receptor Population: Construction Worker
Receptor Age: Adult

ile: TARA3_51.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal Contact	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables			Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	L/cm2	1E-003	USEPA 1989			CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	5,800	USEPA 1992			
	Kp	Permeability	cm/hr	chem-spec				
	ET	Exposure Time	hr/day	8	(1)			
	EF	Exposure Frequency	days/year	196	(2)			
	ED	Exposure Duration	years	1	(2)			
	BW	Body Weight	kg	70	USEPA 1989			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991			
	AT-N	Averaging Time (Non-cancer)	days	274	USEPA 1991			
Inhalation	CW	COPC Concentration in Water	mg/L	See Risk Tables	See Risk Tables			Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Inhalation Rate	m3/day	30	USEPA 1991 (3)			CW x IR x ET x K x EF x ED x 1/BW x 1/AT
	K	Volatilization Factor	L/m3	0.5	USEPA 1991			
	ET	Exposure Time	hr/hr in a work day	8/8	(1)			
	EF	Exposure Frequency	days/year	196	(4)			
	ED	Exposure Duration	years	1	(4)			
	BW	Body Weight	kg	70	USEPA 1997			
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989			
	AT-N	Averaging Time (Non-cancer)	days	274	USEPA 1989			

Sources:

(1) Assume workday of 8 hrs.

(2) Assume 5 days/week for 9 months

(3) Due to intensive activity, assume the RME inhalation rate for an adult.

(4) 5 days/week for 9 months

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-45
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Lower Aquifer
Exposure Point: Area 5B, Groundwater (Car Wash)
Receptor Population: Commercial Worker
Receptor Age: Adult

ile: TARA3_58.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal Contact	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
(carwash)	CF	Conversion Factor	L/cm2	0.001	USEPA 1989	0.001	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	23000	USEPA 1992	20000	USEPA 1992	
	Kp	Permeability	cm/hr	chem-spec		chem-spec		
	ET	Exposure Time	hr/day	8	USEPA 1992	8	USEPA 1992	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	9,125	USEPA 1989	1,825	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-46
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Lower Aquifer [Ambient air (volatilization of VOCs from indoor water use)]
Exposure Point: Area 5B, Groundwater (Car Wash)
Receptor Population: Commercial Worker
Receptor Age: Adult

ile: TARA3_59.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	*COPC Concentration in Air*	*mg/m3*	*See Risk Tables*	*See Risk Tables*	*See Risk Tables*	*See Risk Tables*	*Chronic Daily Intake (CDI) (mg/kg - day)=*
(carwash)	IR	Inhalation Rate	m3/day	20	USEPA 1989	20	USEPA 1989	CA x IR x K x FC x ET x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	unitless	1	USEPA 1989	1	USEPA 1989	
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	
	ET	Exposure Time	hr/hr in work day	8/8	USEPA 1997	8/8	USEPA 1997	
	EF	Exposure Frequency	days/year	250	USEPA 1989	219	USEPA 1989	
	ED	Exposure Duration	years	25	USEPA 1989	5	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	7,300	USEPA 1989	1,825	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

Table 3-47
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area 5A, Surface Soil (0' to 2')
Receptor Population: Offsite Resident
Receptor Age: Adult

File: TARA3_12.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Contaminant in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR-S	Ingestion Rate of Soil	mg/day	100	USEPA 1991, 97	50	USEPA 1991, 97	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	24	USEPA 1989, 91	9	USEPA 1989, 91	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	10,950	USEPA 1991	3,285	USEPA 1991	
Dermal	CS	COPC Contaminant in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm2	5,800	USEPA 1992	5,000	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	24	USEPA 1989, 91	9	USEPA 1989, 91	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	10,950	USEPA, 1991	3,285	USEPA, 1991	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1997: Exposure Factors Handbook. August

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

Table 3-48
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil [Ambient Air (Vapors/particulates)]
Exposure Point: Area 5A, Soil
Receptor Population: Offsite Resident
Receptor Age: Adult

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME *Rationale/* Reference	CT Value	CT *Rationale/* Reference	Intake Equation/ *Model Name*
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/hr in day	24/24	USEPA 1991	18/24	USEPA 1991	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	24	USEPA 1989	9	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1991	70	USEPA 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	8,760	USEPA 1989	3,285	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

Table 3-49
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Lower Aquifer
Exposure Point: Area 5A, Groundwater (Private Well)
Receptor Population: Offsite Resident
Receptor Age: Adult

ile: TARA3_52.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate	L-water/day	2	USEPA 1989	1.4	USEPA 1989	CW x IR x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	350	USEPA 1989	350	USEPA 1989	
	ED	Exposure Duration	years	24	USEPA 1989	9	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	8,760	USEPA 1989	3,285	USEPA 1989	
Dermal Contact (bathing/shower)	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	L/cm2	1E-003	USEPA 1989	1E-003	USEPA 1989	CW x CF x VF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	23,000	USEPA 1997	20,000	USEPA 1997	
	Kp	Permeability	cm/hr	chem-spec	USEPA 1992	chem-spec	USEPA 1992	
	ET	Exposure Time	hr/day	0.58	USEPA 1997	0.17	USEPA 1997	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	24	USEPA 1989	9	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	8,760	USEPA 1989	3,285	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1997: Exposure Factors Handbook. August

(((

Table 3-50
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Ambient Air (volatilization of VOCs)
Exposure Point: Area 5A, Groundwater (Private Wells)
Receptor Population: Offsite Resident
Receptor Age: Adult

ile: TARA3_55.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	COPC Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg - day)=
	IR	Inhalation Rate	m3/hr	0.83	USEPA 1989	0.83	USEPA 1989	CA x IR x K x FC x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/day	0.58	USEPA 1989	0.17	USEPA 1989	
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	
	FC	Fraction Contaminated	unitless	1	USEPA 1997	1	USEPA 1997	
	EF	Exposure Frequency	days/year	350	USEPA 1989	350	USEPA 1989	
	ED	Exposure Duration	years	24	USEPA 1989	9	USEPA 1989	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	8,760	USEPA 1989	3,285	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

Table 3-51
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater, Upper Aquifer
Exposure Point: Area 5A, Groundwater (Outdoor Use)
Receptor Population: Offsite Resident
Receptor Age: Adult

ile: TARA3_47.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) mg/kg-day)=
	IR	Ingestion Rate	L-water/day	0.05	USEPA 1989, 97	0.05	USEPA 1989, 97	CW x IR x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	40	USEPA 1997	40	USEPA 1997	
	ED	Exposure Duration	years	24	USEPA 1989, 91	9	USEPA 1989, 91	
	BW	Body Weight	kg	70	USEPA 1997	70	USEPA 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	4,563	USEPA 1989	1,369	USEPA 1989	
Dermal	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) mg/kg-day)=
	CF	Conversion Factor	L/cm2	1E-03	USEPA 1989	1E-03	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	5,800	USEPA 1997	5,000	USEPA 1997	
	Kp	Permeability	cm/hr	Chem-Specific		Chem-Specific		
	ET	Exposure Time	hr/day	1	USEPA 1997	1	USEPA 1j997	
	EF	Exposure Frequency	days/year	40	USEPA 1997	40	USEPA 1997	
	ED	Exposure Duration	years	24	USEPA 1989, 91	9	USEPA 1989, 91	
	BW	Body Weight	kg	70	USEPA 1997	70	USEPA 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	4,563	USEPA 1989	1,369	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment: Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1997: Exposure Factors Handbook. August

(((

Table 3-52
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 6, Sediment (Creek)
Receptor Population: Offsite Resident
Receptor Age: Adult

File: tara3_36.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	100	USEPA 1991	50	USEPA 1991	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	6	(1)	2	(2)	
	ED	Exposure Duration	years	30	(3)	9	(4)	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	180	(5)	18	(6)	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm²/event	5,800	USEPA 1992	5,000	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm²-event	1	USEPA 1992	0.2	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	6	(1)	2	(2)	
	ED	Exposure Duration	years	30	(3)	9	(4)	
	BW	Body Weight	kg	70	USEPA 1989	70	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	180	(5)	18	(6)	

(1) Assume one day per month in the spring (3 months), and one day per month in the fall (3 months).

(2) Assume one day in the spring and one day in the fall.

(3) *Based on the 90 percentile for individuals living at one residence* (USEPA 1991).

(4) Based on the median number of years that individuals live at one residence (USEPA 1991).

(5) Assume six days per year for 30 years.

(6) Assume two days per year for 9 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Table 3-53
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Area 5A, Soil
Receptor Population: Offsite Resident
Receptor Age: Child

File: TARA3_11.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	CF	Conversion Factor	unitless	1.00E-006	USEPA 1991, 97	1.00E-006	USEPA 1991, 97	CS x IR x CF x FI x EF x ED x 1/BW x 1/AT
	IR-S	Ingestion Rate of Soil	mg/day	200	USEPA 1989	100	USEPA 1989	
	FI	Fraction Ingested	- -	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	6	USEPA 1989, 91	6	USEPA 1989, 91	
	BW	Body Weight	kg	15	USEPA 1989	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	AT-N	Averaging Time (Non-cancer)	days	2,190	USEPA 1991	2,190	USEPA 1991	
Dermal	CS	COPC Concentration in Soil	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm2	2,100	USEPA 1998a, b	1,800	USEPA 1998a, b	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SSAF	Soil to Skin Adherence Factor	mg/cm2-event	1	USEPA 1992	0.2	USEPA 1992	
	CF	Conversion Factor	kg/mg	1.00E-006	USEPA 1989	1.00E-006	USEPA 1989	
	DABS	Dermal Absorption Factor (Solid)	unitless	chemical-specific	USEPA 1998b	chemical-specific	USEPA 1998b	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	6	USEPA 1989, 91	6	USEPA 1989, 91	
	BW	Body Weight	kg	15	USEPA 1989	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-cancer)	days	2,190	USEPA, 1991	2,190	USEPA, 1991	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1993: OSWER Preliminary Review Draft, Superfund's Standard Default Exposure Factors for CT and RME. May 5, Nov. 4

USEPA, 1998a: Integrated Risk Information System (IRIS) on-line database. June.

USEPA, 1998b: Region IX Preliminary Remediation Goals, May 1.

(((

Table 3-54
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Ambient Air (Vapors/particulates)
Exposure Point: Area 5A, Soil
Receptor Population: Offsite Resident
Receptor Age: Child

File: tara3_19.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate	m3/day	20	USEPA 1991	20	USEPA 1991	CA x IR x ET x EF x ED x 1/BW x 1/AT
	ET	Exposure Time	hr/hr in day	24/24	USEPA 1991	18/24	USEPA 1991	
	EF	Exposure Frequency	days/year	350	USEPA 1991	350	USEPA 1991	
	ED	Exposure Duration	years	6	USEPA 1989	6	USEPA 1989	
	BW	Body Weight	kg	15	USEPA 1991	15	USEPA 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	2,190	USEPA 1989	2,190	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

Table 3-55
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Lower Aquifer
Exposure Point: Area 5A, Groundwater (Private Wells)
Receptor Population: Offsite Resident
Receptor Age: Child

ile: TARA3_52.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
	IR	Ingestion Rate	L-water/day	1	USEPA 1989	0.5	USEPA 1989	CW x IR x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	350	USEPA 1997	250	USEPA 1997	
	ED	Exposure Duration	years	6	USEPA 1989	6	USEPA 1989	
	BW	Body Weight	kg	15	USEPA 1989	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	2,190	USEPA 1989	2,190	USEPA 1989	
Dermal Contact	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day)=
(bathing/shower)	CF	Conversion Factor	L/cm2	1E-003	USEPA 1989	1E-003	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	8,400	USEPA 1997	7,200	USEPA 1997	
	Kp	Permeability	cm/hr	chem-spec	USEPA 1992	chem-spec	USEPA 1992	
	ET	Exposure Time	hr/day	0.75	USEPA 1997	0.33	USEPA 1997	
	EF	Exposure Frequency	days/year	500	USEPA 1997	250	USEPA 1997	
	ED	Exposure Duration	years	6	USEPA 1989	6	USEPA 1989	
	BW	Body Weight	kg	15	USEPA 1989	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	2,190	USEPA 1989	2,190	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.
USEPA, 1997: Exposure Factors Handbook. August

(((

Table 3-56
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Ambient air (volatilization of VOCs from indoor water use)
Exposure Point: Area 5A, Groundwater (Private-Household)
Receptor Population: Offsite Resident
Receptor Age: Child

ile: TARA3_55.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	COPC Concentration in Air	mg/m3	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg - day)=
	IR	Inhalation Rate	m3/hr	0.83	USEPA 1989	0.83	USEPA 1989	CA x IR x FC x K x ET x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	unitless	1	USEPA 1989	1	USEPA 1989	
	K	Volatilization Factor	L/m3	0.5	USEPA 1991	0.5	USEPA 1991	
	ET	Exposure Time	hr/day	0.75	USEPA 1997	0.33	USEPA 1997	
	EF	Exposure Frequency	days/year	500	USEPA 1989	350	USEPA 1989	
	ED	Exposure Duration	years	6	USEPA 1989	6	USEPA 1989	
	BW	Body Weight	kg	15	USEPA 1989	15	USEPA 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	2,190	USEPA 1989	2,190	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

xposure Factors Handbook. August

Table 3-57
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Upper Aquifer, Outdoor Use
Exposure Point: Area 5A, Groundwater (Outdoor Use)
Receptor Population: Offsite Resident
Receptor Age: Child

ile: TARA3_47.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) mg/kg-day)=
	IR	Ingestion Rate	L-water/day	0.15	USEPA 1989, 97	0.05	USEPA 1989, 97	CW x IR x EF x ED x 1/BW x 1/AT
	FC	Fraction Contaminated	Unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	36	USEPA 1997	9	USEPA 1997	
	ED	Exposure Duration	years	6	USEPA 1989, 91	6	USEPA 1989, 91	
	BW	Body Weight	kg	15	USEPA 1997	15	USEPA 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	548	USEPA 1989	548	USEPA 1989	
Dermal	CW	COPC Concentration in Water	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) mg/kg-day)=
	CF	Conversion Factor	L/cm2	1E-03	USEPA 1989	1E-03	USEPA 1989	CW x CF x SA x Kp x ET x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area	cm2	8,400	USEPA 1997	7,200	USEPA 1989	
	Kp	Permeability	cm/hr	chem-specific	USEPA 1992	chem-specific	USEPA 1992	
	ET	Exposure Time	hr/day	3	USEPA 1997	1	USEPA 1997	
	EF	Exposure Frequency	days/year	36	USEPA 1997	9	USEPA 1997	
	ED	Exposure Duration	years	6	USEPA 1989, 91	6	USEPA 1989, 91	
	BW	Body Weight	kg	15	USEPA 1997	15	USEPA 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA 1989	25,550	USEPA 1989	
	AT-N	Averaging Time (Non-cancer)	days	548	USEPA 1989	548	USEPA 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA, 1992: Dermal Exposure Assessment: Principles and Applications. Interim Report. EPA/600/8-91/011B.

USEPA, 1997: Exposure Factors Handbook. August

(((

((

Table 3-58
Values Used For Daily Intake Calculations
American Chemical Service NPL Site

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area 6, Sediment
Receptor Population: Offsite Resident
Receptor Age: Child

File: tara3_36.wk4

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate	mg/day	200	USEPA 1991	100	USEPA 1991	CS x IR x CF x FI x EF x ED x 1 /BW x 1/AT
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	
	FI	Fraction Ingested From Contaminated Source	unitless	1	USEPA 1989	1	USEPA 1989	
	EF	Exposure Frequency	days/year	78	(1)	52	(2)	
	ED	Exposure Duration	years	6	(3)	6	(3)	
	BW	Body Weight	kg	15	USEPA 1989	15	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,643	(4)	548	(5)	
Dermal	CS	COPC Concentration in Sediment	mg/kg	See Risk Tables	See Risk Tables	See Risk Tables	See Risk Tables	CDI (mg/kg-day) =
	CF	Conversion Factor	kg/mg	1E-006	USEPA 1989	1E-006	USEPA 1989	CS x CF x SA x AF x ABS x EF x ED x 1/BW x 1/AT
	SA	Skin Surface Area Available for Contact	cm^2/event	2,100	USEPA 1992	1,800	USEPA 1992	
	AF	Soil to Skin Adherence Factor	mg/cm^2-event	0.3	USEPA 1992	0.3	USEPA 1992	
	ABS	Absorption Factor	unitless	Chemical Specific		Chemical Specific		
	EF	Exposure Frequency	days/year	78	(1)	52	(2)	
	ED	Exposure Duration	years	6	(3)	6	(4)	
	BW	Body Weight	kg	50	USEPA 1989	50	USEPA 1989	
	ATc	Averaging Time (Cancer)	days	25,550	USEPA 1991	25,550	USEPA 1991	
	ATn	Averaging Time (Non-Cancer)	days	1,643	(5)	548	(6)	

(1) Assume four days per week in the summer (3 months), one day per week in the spring (3 months), and one day per week in the fall (3 months).

(2) Assume four days per week during the summer months only.

(3) Assume 6 years based on the total years in the 1-6 year old age group.

(4) Assume to occur 9 months out of the year for 6 years.

(6) Assume to occur 3 months out of the year for 6 years.

Sources:

USEPA 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. EPA/540/1-89/002.

USEPA 1991: Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03, March 15.

USEPA 1992: Dermal Exposure Assessment : Principles and Applications. Interim Report. EPA/600/8-91/011B.

Tables 4-1
through 4-6

Table 4-1
Adult Non-cancer Toxicity Data – Oral/Dermal
ACS NPL Site – Griffith, Indiana

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ or System	Combined Uncertainty/ Modifying Factors	Sources of RfD/ Target Organ*	Dates of RfD: (3) Target Organ (MM/DD/YY)
1,1,1-Trichloroethane	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	liver		E	10/01/98
1,1,2,2-Tetrachloroethane	Chronic	6.0E-002	mg/kg-day	70	4.2E-002	mg/kg-day	liver		E	10/01/98
1,1,2-Trichloroethane	Chronic	4.0E-003	mg/kg-day	81	3.2E-003	mg/kg-day	blood alterations		I	10/01/98
1,1-Dichloroethane	Chronic	1.0E-001	mg/kg-day		1.0E-001	mg/kg-day	circulatory system		H	10/01/98
1,2,4-Trichlorobenzene	Chronic	1.0E-002	mg/kg-day		1.0E-002	mg/kg-day	low body wt		I	10/01/98
1,2,4-Trimethylbenzene	Chronic	5.0E-002	mg/kg-day		5.0E-002	mg/kg-day	circulatory system		E	10/01/98
1,2-Dichlorobenzene	Chronic	9.0E-002	mg/kg-day		9.0E-002	mg/kg-day	CNS		I	10/01/98
1,2-Dichloroethane	Chronic	3.0E-002	mg/kg-day	100	3.0E-002	mg/kg-day	fetotoxic		E	10/01/98
1,2-Dichloroethene(mixture)	Chronic	9.0E-003	mg/kg-day	100	9.0E-003	mg/kg-day	kidney		H	10/01/98
1,2-Dichloropropane	Chronic		mg/kg-day			mg/kg-day	GI tract		H	10/01/98
1,3,5-Trimethylbenzene	Chronic	5.0E-002	mg/kg-day		5.0E-002	mg/kg-day	circulatory system		E	10/01/98
1,3-Dichlorobenzene	Chronic	3.0E-002	mg/kg-day		3.0E-002	mg/kg-day	circulatory system		E	10/01/98
1,4-Dichlorobenzene	Chronic	3.0E-002	mg/kg-day	100	3.0E-002	mg/kg-day	GI tract		E	10/01/98
2,2'-oxybis(1-Chloropropane)	Chronic	4.0E-002	mg/kg-day		4.0E-002	mg/kg-day	low body wt		I	10/01/98
2,4,5-Trichlorophenol	Chronic	1.0E-001	mg/kg-day	81	8.1E-002	mg/kg-day	kidney		I	10/01/98
2,4-Dichlorophenol	Chronic	3.0E-003	mg/kg-day		3.0E-003	mg/kg-day	kidney		I	10/01/98
2,4-Dimethylphenol	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	generalized		I	10/01/98
2,4-Dinitrotoluene	Chronic	2.0E-003	mg/kg-day	70	1.4E-003	mg/kg-day	CNS		I	10/01/98
2,6-Dinitrotoluene	Chronic	1.0E-003	mg/kg-day	85	8.5E-004	mg/kg-day	CNS		I	10/01/98
2-Butanone (MEK)	Chronic	6.0E-001	mg/kg-day	95	5.7E-001	mg/kg-day	liver		I	10/01/98
2-Hexanone	Chronic	4.0E-002	mg/kg-day		4.0E-002	mg/kg-day	CNS		E	10/01/98
2-Methylnaphthalene	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	GI tract		O	10/01/98
2-Methylphenol (O-Cresol)	Chronic	5.0E-002	mg/kg-day		5.0E-002	mg/kg-day	liver		I	10/01/98
3,3-Dichlorobenzidine	Chronic		mg/kg-day			mg/kg-day	liver			
4,4'-DDD	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
4,4'-DDE	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
4,4'-DDT	Chronic	5.0E-004	mg/kg-day		5.0E-004	mg/kg-day	fetotoxic		I	10/01/98
4-Methyl-2-Pentanone	Chronic	8.0E-002	mg/kg-day		8.0E-002	mg/kg-day	liver		H	10/01/98
4-Methylphenol (P-Cresol)	Chronic	5.0E-003	mg/kg-day	65	3.3E-003	mg/kg-day	respiratory		H	10/01/98
4-Nitrophenol	Chronic	8.0E-003	mg/kg-day		8.0E-003	mg/kg-day	CNS		E	10/01/98
Acenaphthene	Chronic	6.0E-002	mg/kg-day		6.0E-002	mg/kg-day	eyes		I	10/01/98
Acetone	Chronic	1.0E-001	mg/kg-day	78.5	7.9E-002	mg/kg-day	fetotoxic		I	10/01/98
Aldrin	Chronic	3.0E-005	mg/kg-day		3.0E-005	mg/kg-day	liver		I	10/01/98
Alpha-BHC	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
Alpha-Chlordane	Chronic	5.0E-004	mg/kg-day		5.0E-004	mg/kg-day	liver		I	10/01/98
Aluminum	Chronic	1.0E+000	mg/kg-day		1.0E+000	mg/kg-day	circulatory system		E	10/01/98
Ammonia	Chronic		mg/kg-day			mg/kg-day	kidney			
Anthracene	Chronic	3.0E-001	mg/kg-day		3.0E-001	mg/kg-day	GI tract		I	10/01/98
Antimony	Chronic	4.0E-004	mg/kg-day	1	4.0E-006	mg/kg-day	skin		I	10/01/98
Arochlor-1242	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
Arochlor-1248	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
Arochlor-1254	Chronic	2.0E-005	mg/kg-day	89	1.8E-005	mg/kg-day	liver		I	10/01/98
Arochlor-1260	Chronic		mg/kg-day			mg/kg-day	circulatory system		I	10/01/98
Arsenic	Chronic	3.0E-004	mg/kg-day	95	2.9E-004	mg/kg-day	circulatory system		I	10/01/98
Barium	Chronic	7.0E-002	mg/kg-day	100	7.0E-002	mg/kg-day	NA		I	10/01/98
Benzene	Chronic	3.0E-003	mg/kg-day	90	2.7E-003	mg/kg-day	hematoxicity		E	10/01/98
Benzo(a)Anthracene	Chronic		mg/kg-day	100		mg/kg-day	NA		E	10/01/98
Benzo(a)Pyrene	Chronic		mg/kg-day	85		mg/kg-day	NA		I	10/01/98
Benzo(b)Fluoranthene	Chronic		mg/kg-day			mg/kg-day	NA		E	10/01/98
Benzo(k)Fluoranthene	Chronic		mg/kg-day			mg/kg-day	NA		E	10/01/98
Benzoic Acid	Chronic	4.0E+000	mg/kg-day		4.0E+000	mg/kg-day	GI tract		I	10/01/98
Benzyl Alcohol	Chronic	3.0E-001	mg/kg-day		3.0E-001	mg/kg-day	CNS		H	10/01/98

Table 4-1
Adult Non-cancer Toxicity Data -- Oral/Dermal
ACS NPL Site -- Griffith, Indiana

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ or System	Combined Uncertainty/ Modifying Factors	Sources of RfD/ Target Organ*	Dates of RfD: (3) Target Organ (MM/DD/YY)
Beryllium	Chronic	2.0E-003	mg/kg-day	1	2.0E-005	mg/kg-day	kidney		I	10/01/98
Beta-BHC	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
bis(2-Chloroethyl)Ether	Chronic		mg/kg-day			mg/kg-day	reproductive		I	10/01/98
bis(2-Ethylhexyl)Phthalate	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	liver		I	10/01/98
Bromodichloromethane	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	liver		I	10/01/98
Butyl Benzyl Phthalate	Chronic	2.0E-001	mg/kg-day		2.0E-001	mg/kg-day	mammary		I	10/01/98
Cadmium (food)	Chronic	1.0E-003	mg/kg-day	2.5	2.5E-005	mg/kg-day	kidney		I	10/01/98
Cadmium (water)	Chronic	5.0E-004	mg/kg-day	5	2.5E-005	mg/kg-day	kidney		I	10/01/98
Carbazole	Chronic		mg/kg-day			mg/kg-day	NA			
Carbon Disulfide	Chronic	1.0E-001	mg/kg-day		1.0E-001	mg/kg-day	adrenal		I	10/01/98
Chlorobenzene	Chronic	2.0E-002	mg/kg-day	31	6.2E-003	mg/kg-day	liver		I	10/01/98
Chloroethane	Chronic	4.0E-001	mg/kg-day		4.0E-001	mg/kg-day	liver		E	10/01/98
Chloroform	Chronic	1.0E-002	mg/kg-day	95.5	9.6E-003	mg/kg-day	circulatory system		I	10/01/98
Chloromethane	Chronic		mg/kg-day			mg/kg-day	kidney		H	10/01/98
Chromium (III)	Chronic	1.5E+000	mg/kg-day	0.4	6.0E-003	mg/kg-day	liver		I	10/01/98
Chromium (VI)	Chronic	3.0E-003	mg/kg-day	10	3.0E-004	mg/kg-day	NA		I	10/01/98
Chrysene	Chronic		mg/kg-day	41		mg/kg-day	liver		E	10/01/98
cis-1,2-Dichloroethene	Chronic	1.0E-002	mg/kg-day	100	1.0E-002	mg/kg-day	circulatory system		H	10/01/98
Cobalt	Chronic	6.0E-002	mg/kg-day		6.0E-002	mg/kg-day	heart		E	10/01/98
Copper	Chronic	4.0E-002	mg/kg-day	60	2.4E-002	mg/kg-day	liver		H	10/01/98
Cyanide	Chronic	2.0E-002	mg/kg-day	50	1.0E-002	mg/kg-day	liver		I	10/01/98
Di-n-Butylphthalate	Chronic	1.0E-001	mg/kg-day	97	9.7E-002	mg/kg-day	liver		I	10/01/98
Di-n-Octyl Phthalate	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	NA		H	10/01/98
Dibenzo(a,h)Anthracene	Chronic		mg/kg-day	90		mg/kg-day	NA		E	10/01/98
Dibenzofuran	Chronic	4.0E-003	mg/kg-day		4.0E-003	mg/kg-day	dec growth rate		E	10/01/98
Dieldrin	Chronic	5.0E-005	mg/kg-day	100	5.0E-005	mg/kg-day	liver		I	10/01/98
Diethylphthalate	Chronic	8.0E-001	mg/kg-day		8.0E-001	mg/kg-day	low body wt		I	10/01/98
Dimethylphthalate	Chronic	1.0E+001	mg/kg-day		1.0E+001	mg/kg-day	GI tract		W	10/01/98
Endosulfan	Chronic	6.0E-003	mg/kg-day		6.0E-003	mg/kg-day	kidney		I	10/01/98
Endrin	Chronic	3.0E-004	mg/kg-day		3.0E-004	mg/kg-day	liver		I	10/01/98
Ethylbenzene	Chronic	1.0E-001	mg/kg-day	92	9.2E-002	mg/kg-day	liver		I	10/01/98
Fluoranthene	Chronic	4.0E-002	mg/kg-day		4.0E-002	mg/kg-day	kidney		I	10/01/98
Fluorene	Chronic	4.0E-002	mg/kg-day		4.0E-002	mg/kg-day	skeletal system		I	10/01/98
Gamma-BHC	Chronic	3.0E-004	mg/kg-day	100	3.0E-004	mg/kg-day	liver		I	10/01/98
Gamma-Chlordane	Chronic	5.0E-004	mg/kg-day		5.0E-004	mg/kg-day	liver		I	10/01/98
Heptachlor	Chronic	5.0E-004	mg/kg-day		5.0E-004	mg/kg-day	liver		I	10/01/98
Heptachlor epoxide	Chronic	1.3E-005	mg/kg-day		1.3E-005	mg/kg-day	liver		I	10/01/98
Hexachlorobenzene	Chronic	8.0E-004	mg/kg-day	80	6.4E-004	mg/kg-day	liver		I	10/01/98
Hexachlorobutadiene	Chronic	2.0E-004	mg/kg-day		2.0E-004	mg/kg-day	low body wt		H	10/01/98
Indeno(1,2,3-cd)Pyrene	Chronic		mg/kg-day			mg/kg-day	NA		E	10/01/98
Iron	Chronic	3.0E-001	mg/kg-day		3.0E-001	mg/kg-day	NA		E	10/01/98
Isophorone	Chronic	2.0E-001	mg/kg-day		2.0E-001	mg/kg-day	kidney		I	10/01/98
Lead	Chronic		mg/kg-day	15		mg/kg-day	CNS			
m,p-xylene	Chronic	2.0E+000	mg/kg-day	90	1.8E+000	mg/kg-day	fetotoxic		H	10/01/98
Manganese (nonfood)	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	kidney		I	10/01/98
Mercury	Chronic		mg/kg-day			mg/kg-day	low body wt			
Methoxychlor	Chronic	5.0E-003	mg/kg-day		5.0E-003	mg/kg-day	reproductive system		I	10/01/98
Methylene Chloride	Chronic	6.0E-002	mg/kg-day	55	3.3E-002	mg/kg-day	liver		I	10/01/98
Naphthalene	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	circulatory system		I	10/01/98
Nickel	Chronic	0.02	mg/kg-day	5	0.001	mg/kg-day	low body wt		I	10/01/98
Nitrate/Nitrite	Chronic	0.1	mg/kg-day	3	0.003	mg/kg-day	fetotoxic		I	10/01/98
N-Nitrosodiphenylamine	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98

Table 4-1
Adult Non-cancer Toxicity Data -- Oral/Dermal
ACS NPL Site -- Griffith, Indiana

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ or System	Combined Uncertainty/ Modifying Factors	Sources of RfD/ Target Organ*	Dates of RfD: (3) Target Organ (MM/DD/YY)
ortho-xylene	Chronic	2	mg/kg-day	90	1.8	mg/kg-day	fetotoxic		H	10/01/98
Pentachlorophenol	Chronic	0.03	mg/kg-day		0.03	mg/kg-day	liver		I	10/01/98
Phenanthrene	Chronic		mg/kg-day			mg/kg-day	NA			
Phenol	Chronic	0.6	mg/kg-day		0.6	mg/kg-day	liver		I	10/01/98
Pyrene	Chronic	0.03	mg/kg-day		0.03	mg/kg-day	liver		I	10/01/98
Selenium	Chronic	0.005	mg/kg-day		0.005	mg/kg-day	liver		I	10/01/98
Silver	Chronic	0.005	mg/kg-day	21	0.00105	mg/kg-day	skin		I	10/01/98
Styrene	Chronic	0.2	mg/kg-day		0.2	mg/kg-day	liver		I	10/01/98
Tetrachloroethene	Chronic	0.01	mg/kg-day	100	0.01	mg/kg-day	liver		I	10/01/98
Thallium	Chronic	0.00007	mg/kg-day		0.00007	mg/kg-day	NA		O	10/01/98
Toluene	Chronic	0.2	mg/kg-day	100	0.2	mg/kg-day	liver		I	10/01/98
trans-1,2-Dichloroethene	Chronic	0.02	mg/kg-day	100	0.02	mg/kg-day	kidney		I	10/01/98
Trichloroethene	Chronic	0.006	mg/kg-day	98	0.00588	mg/kg-day	liver		E	10/01/98
Vanadium	Chronic	0.007	mg/kg-day		0.007	mg/kg-day	circulatory system		H	10/01/98
Vinyl Chloride	Chronic		mg/kg-day	100		mg/kg-day	liver		H	10/01/98
Xylene (mixed)	Chronic	2	mg/kg-day	89.5	1.79	mg/kg-day	fetotoxic		I	10/01/98
Zinc	Chronic	0.3	mg/kg-day	30	0.09	mg/kg-day	thyroid		I	10/01/98

NA = Not Applicable

(1) Refer to RAGS, Part A

(2) Adjusted Dermal RfD = Oral RfD * (Adjustment Factor), default value of 100% was used when Adjustment Factor was not available.

(3) Date of most recent search of IRIS or most recent EPA-ECAO provisional value.

* E = EPA - ECAO
H = Health Effects Assessment Summary Tables (HEAST)
I = Integrated Risk Information System (IRIS)
O = Other

Table 4-2
Adult/Child Cancer Toxicity Data -- Oral/Dermal
ACS Site -- Griffith, IA

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source*	Date (2) (MM/DD/YY)
1,1,1-Trichloroethane				(mg/kg-day) -1	D		
1,1,2,2-Tetrachloroethane	2.0E-001	70	2.9E-001	(mg/kg-day) -1	C	I	10/01/98
1,1,2-Trichloroethane	5.7E-002	81	7.0E-002	(mg/kg-day) -1	C	I	10/01/98
1,1-Dichloroethane				(mg/kg-day) -1	C		
1,2,4-Trichlorobenzene				(mg/kg-day) -1	D		
1,2,4-Trimethylbenzene				(mg/kg-day) -1			
1,2-Dichlorobenzene				(mg/kg-day) -1	D		
1,2-Dichloroethane	9.1E-002	100	9.1E-002	(mg/kg-day) -1	B2	I	10/01/98
1,2-Dichloroethene(mixture)		100		(mg/kg-day) -1			
1,2-Dichloropropane	6.8E-002		6.8E-002	(mg/kg-day) -1	B2	H	10/01/98
1,3,5-Trimethylbenzene				(mg/kg-day) -1			
1,3-Dichlorobenzene				(mg/kg-day) -1	D		
1,4-Dichlorobenzene	2.4E-002	100	2.4E-002	(mg/kg-day) -1	C	H	10/01/98
2,2'-oxybis(1-Chloropropane	7.0E-002		7.0E-002	(mg/kg-day) -1	C	H	10/01/98
2,4,5-Trichlorophenol		81		(mg/kg-day) -1			
2,4-Dichlorophenol				(mg/kg-day) -1			
2,4-Dimethylphenol				(mg/kg-day) -1			
2,4-Dinitrotoluene		70		(mg/kg-day) -1	B2		
2,6-Dinitrotoluene	6.8E-001	85	8.0E-001	(mg/kg-day) -1	B2	I	10/01/98
2-Butanone (MEK)		95		(mg/kg-day) -1	D		
2-Hexanone				(mg/kg-day) -1			
2-Methylnaphthalene				(mg/kg-day) -1	D		
2-Methylphenol (O-Cresol)				(mg/kg-day) -1	C		
3,3-Dichlorobenzidine	4.5E-001		4.5E-001	(mg/kg-day) -1	B2	I	10/01/98
4,4'-DDD	2.4E-001		2.4E-001	(mg/kg-day) -1	B2	I	10/01/98
4,4'-DDE	3.4E-001		3.4E-001	(mg/kg-day) -1	B2	I	10/01/98
4,4'-DDT	3.4E-001		3.4E-001	(mg/kg-day) -1	B2	I	10/01/98
4-Methyl-2-Pentanone				(mg/kg-day) -1			
4-Methylphenol (P-Cresol)		65		(mg/kg-day) -1	C		
4-Nitrophenol				(mg/kg-day) -1			
Acenaphthene				(mg/kg-day) -1			
Acetone		78.5		(mg/kg-day) -1	D		
Aldrin	1.7E+001		1.7E+001	(mg/kg-day) -1	B2	I	10/01/98
Alpha-BHC	6.3E+000		6.3E+000	(mg/kg-day) -1	B2	I	10/01/98
Alpha-Chlordane	3.5E-001		3.5E-001	(mg/kg-day) -1	B2	I	10/01/98
Aluminum				(mg/kg-day) -1			
Ammonia				(mg/kg-day) -1			
Anthracene				(mg/kg-day) -1	D		
Antimony		1		(mg/kg-day) -1			
Arochlor-1242	2.0E+000		2.0E+000	(mg/kg-day) -1	B2	I	10/01/98
Arochlor-1248	2.0E+000		2.0E+000	(mg/kg-day) -1	B2	I	10/01/98
Arochlor-1254	2.0E+000	89	2.2E+000	(mg/kg-day) -1	B2	I	10/01/98
Arochlor-1260	2.0E+000		2.0E+000	(mg/kg-day) -1	B2	I	10/01/98
Arsenic	1.5E+000	95	1.6E+000	(mg/kg-day) -1	A	I	10/01/98
Barium		100		(mg/kg-day) -1	D		
Benzene	2.9E-002	90	3.2E-002	(mg/kg-day) -1	A	E	10/01/98
Benzo(a)Anthracene	7.3E-001	100	7.3E-001	(mg/kg-day) -1	B2	E	10/01/98
Benzo(a)Pyrene	7.3E+000	85	8.6E+000	(mg/kg-day) -1	B2	I	10/01/98
Benzo(b)Fluoranthene	7.3E-001		7.3E-001	(mg/kg-day) -1	B2		
Benzo(k)Fluoranthene	7.3E-002		7.3E-002	(mg/kg-day) -1	B2	E	10/01/98
Benzoic Acid				(mg/kg-day) -1	D		
Benzyl Alcohol				(mg/kg-day) -1			
Beryllium		1		(mg/kg-day) -1	C		

Table 4-2
Adult/Child Cancer Toxicity Data -- Oral/Dermal
ACS Site -- Griffith, IA

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source*	Date (2) (MM/DD/YY)
Beta-BHC	1.8E+000		1.8E+000	(mg/kg-day)$^{-1}$	B1	I	10/01/98
bis(2-Chloroethyl)Ether	1.1E+000		1.1E+000	(mg/kg-day)$^{-1}$	B2	I	10/01/98
bis(2-Ethylhexyl)Phthalate	1.4E-002		1.4E-002	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Bromodichloromethane	6.2E-002		6.2E-002	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Butyl Benzyl Phthalate				(mg/kg-day)$^{-1}$	C		
Cadmium (food)		2.5		(mg/kg-day)$^{-1}$	B1		
Cadmium (water)		5		(mg/kg-day)$^{-1}$	B1		
Carbazole	2.0E-002		2.0E-002	(mg/kg-day)$^{-1}$	B2		
Carbon Disulfide				(mg/kg-day)$^{-1}$			
Chlorobenzene		31		(mg/kg-day)$^{-1}$	D		
Chloroethane	2.9E-003		2.9E-003	(mg/kg-day)$^{-1}$		E	10/01/98
Chloroform	6.1E-003	95.5	6.4E-003	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Chloromethane	1.3E-002		1.3E-002	(mg/kg-day)$^{-1}$	C	H	10/01/98
Chromium (III)		0.4		(mg/kg-day)$^{-1}$			
Chromium (VI)	3.0E-005	10	3.0E-004	(mg/kg-day)$^{-1}$	A		
Chrysene	7.3E-003	41	1.8E-002	(mg/kg-day)$^{-1}$	B2	E	10/01/98
cis-1,2-Dichloroethene		100		(mg/kg-day)$^{-1}$	D		
Cobalt				(mg/kg-day)$^{-1}$			
Copper		60		(mg/kg-day)$^{-1}$	D		
Cyanide		50		(mg/kg-day)$^{-1}$	D		
Di-n-Butylphthalate		97		(mg/kg-day)$^{-1}$	D		
Di-n-Octyl Phthalate				(mg/kg-day)$^{-1}$			
Dibenzo(a,h)Anthracene	7.3E+000	90	8.1E+000	(mg/kg-day)$^{-1}$	B2	E	10/01/98
Dibenzofuran				(mg/kg-day)$^{-1}$	D		
Dieldrin	1.6E+001	100	1.6E+001	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Diethylphthalate				(mg/kg-day)$^{-1}$	D		
Dimethylphthalate				(mg/kg-day)$^{-1}$	D		
Endosulfan				(mg/kg-day)$^{-1}$			
Endrin				(mg/kg-day)$^{-1}$			
Ethylbenzene		92		(mg/kg-day)$^{-1}$	D		
Fluoranthene				(mg/kg-day)$^{-1}$	D		
Fluorene				(mg/kg-day)$^{-1}$	D		
Gamma-BHC	1.3E+000	100	1.3E+000	(mg/kg-day)$^{-1}$	B2-C	H	10/01/98
Gamma-Chlordane	3.5E-001		3.5E-001	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Heptachlor	4.5E+000		4.5E+000	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Heptachlor epoxide	9.1E+000		9.1E+000	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Hexachlorobenzene	1.6E+000	80	2.0E+000	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Hexachlorobutadiene	7.8E-002		7.8E-002	(mg/kg-day)$^{-1}$	C	I	10/01/98
Indeno(1,2,3-cd)Pyrene	7.3E-001		7.3E-001	(mg/kg-day)$^{-1}$	B2	E	10/01/98
Iron				(mg/kg-day)$^{-1}$			
Isophorone	9.5E-004		9.5E-004	(mg/kg-day)$^{-1}$	C	I	10/01/98
Lead		15		(mg/kg-day)$^{-1}$	B2		
m,p-xylene		90		(mg/kg-day)$^{-1}$	D		
Manganese (nonfood)				(mg/kg-day)$^{-1}$	D		
Mercury				(mg/kg-day)$^{-1}$	D	I	10/01/98
Methoxychlor				(mg/kg-day)$^{-1}$	D		
Methylene Chloride	7.5E-003	55	1.4E-002	(mg/kg-day)$^{-1}$	B2	I	10/01/98
Naphthalene				(mg/kg-day)$^{-1}$	D		
Nickel		5		(mg/kg-day)$^{-1}$	A		
Nitrate/Nitrite		3		(mg/kg-day)$^{-1}$			
N-Nitrosodiphenylamine	4.9E-003		4.9E-003	(mg/kg-day)$^{-1}$	B2	I	10/01/98
ortho-xylene		90		(mg/kg-day)$^{-1}$	D	E	10/01/98
Pentachlorophenol	1.2E-001		1.2E-001	(mg/kg-day)$^{-1}$	B2	I	10/01/98

Table 4-2
Adult/Child Cancer Toxicity Data -- Oral/Dermal
ACS Site -- Griffith, IA

FILE: c:\projects\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source*	Date (2) (MM/DD/YY)
Phenanthrene				$(mg/kg\text{-}day)^{-1}$			
Phenol				$(mg/kg\text{-}day)^{-1}$	D		
Pyrene				$(mg/kg\text{-}day)^{-1}$	D	E	10/01/98
Selenium				$(mg/kg\text{-}day)^{-1}$	D		
Silver		21		$(mg/kg\text{-}day)^{-1}$	D	H	10/01/98
Styrene				$(mg/kg\text{-}day)^{-1}$			
Tetrachloroethene	5.2E-002	100	5.2E-002	$(mg/kg\text{-}day)^{-1}$	C-B2	E	10/01/98
Thallium				$(mg/kg\text{-}day)^{-1}$			
Toluene		100		$(mg/kg\text{-}day)^{-1}$	D		
trans-1,2-Dichloroethene		100		$(mg/kg\text{-}day)^{-1}$			
Trichloroethene	1.1E-002	98	1.1E-002	$(mg/kg\text{-}day)^{-1}$	C-B2	E	10/01/98
Vanadium				$(mg/kg\text{-}day)^{-1}$			
Vinyl Chloride	1.9E+000	100	1.9E+000	$(mg/kg\text{-}day)^{-1}$	A	H	10/01/98
Xylene (mixed)		89.5		$(mg/kg\text{-}day)^{-1}$	D		
Zinc		30		$(mg/kg\text{-}day)^{-1}$	D		

NA = Not Applicable

* E = EPA - ECAO

H = Health Effects Assessment Summary Tables (HEAST)

I = Integrated Risk Information System (IRIS)

(1) Adjusted Dermal SF = Oral SF / (Adjustment Factor), default value of 100% was used when Adjustment Factor was not available.

(2) Date of most recent search of IRIS or most recent EPA-ECAO provisional value.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

TABLE 4-3
ADULT NON-CANCER TOXICITY DATA -- INHALATION
ACS Site -- Griffith, IA

FILE c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD/ Target Organ*	Dates (2) (MM/DD/YY)
1,1,1-Trichloroethane	Chronic	1.0E+000	mg/m3	2.9E-001	mg/kg-day	liver		E	10/01/98
1,1,2,2-Tetrachloroethane	Chronic		mg/m3		mg/kg-day	liver			
1,1,2-Trichloroethane	Chronic		mg/m3		mg/kg-day	liver			
1,1-Dichloroethane	Chronic	4.9E-001	mg/m3	1.4E-001	mg/kg-day	kidney		A	10/01/98
1,2,4-Trichlorobenzene	Chronic	2.0E-001	mg/m3	5.7E-002	mg/kg-day	liver		H	10/01/98
1,2,4-Trimethylbenzene	Chronic	6.0E-003	mg/m3	1.7E-003	mg/kg-day	respiratory system		E	10/01/98
1,2-Dichlorobenzene	Chronic	3.2E-002	mg/m3	9.0E-003	mg/kg-day	low body weight		E	10/01/98
1,2-Dichloroethane	Chronic	4.9E-003	mg/m3	1.4E-003	mg/kg-day	circulatory system		E	10/01/98
1,2-Dichloroethene(mixture)	Chronic		mg/m3		mg/kg-day				
1,2-Dichloropropane	Chronic	4.0E-003	mg/m3	1.1E-003	mg/kg-day			I	10/01/98
1,3,5-Trimethylbenzene	Chronic	6.0E-003	mg/m3	1.7E-003	mg/kg-day	respiratory system		E	10/01/98
1,3-Dichlorobenzene	Chronic	7.0E-003	mg/m3	2.0E-003	mg/kg-day	respiratory system		E	10/01/98
1,4-Dichlorobenzene	Chronic	8.0E-001	mg/m3	2.3E-001	mg/kg-day	liver		I	10/01/98
2,2'-oxybis(1-Chloropropane)	Chronic		mg/m3		mg/kg-day	liver			
2,4,5-Trichlorophenol	Chronic		mg/m3		mg/kg-day				
2,4-Dichlorophenol	Chronic		mg/m3		mg/kg-day				
2,4-Dimethylphenol	Chronic		mg/m3		mg/kg-day			I	10/01/98
2,4-Dinitrotoluene	Chronic		mg/m3		mg/kg-day				
2,6-Dinitrotoluene	Chronic		mg/m3		mg/kg-day	NA			
2-Butanone (MEK)	Chronic	1.0E+000	mg/m3	2.9E-001	mg/kg-day	CNS		I	10/01/98
2-Hexanone	Chronic	4.9E-003	mg/m3	1.4E-003	mg/kg-day	CNS		E	10/01/98
2-Methylnaphthalene	Chronic		mg/m3		mg/kg-day				
2-Methylphenol (O-Cresol)	Chronic		mg/m3		mg/kg-day				
3,3-Dichlorobenzidine	Chronic		mg/m3		mg/kg-day				
4,4'-DDD	Chronic		mg/m3		mg/kg-day				
4,4'-DDE	Chronic		mg/m3		mg/kg-day				
4,4'-DDT	Chronic		mg/m3		mg/kg-day	liver			
4-Methyl-2-Pentanone	Chronic	7.0E-002	mg/m3	2.0E-002	mg/kg-day	CNS		A	10/01/98
4-Methylphenol (P-Cresol)	Chronic		mg/m3		mg/kg-day				
4-Nitrophenol	Chronic		mg/m3		mg/kg-day				
Acenaphthene	Chronic		mg/m3		mg/kg-day				
Acetone	Chronic		mg/m3		mg/kg-day				
Aldrin	Chronic		mg/m3		mg/kg-day				
Alpha-BHC	Chronic		mg/m3		mg/kg-day				
Alpha-Chlordane	Chronic	7.0E-004	mg/m3	2.0E-004	mg/kg-day	liver			
Aluminum	Chronic	3.5E-003	mg/m3	1.0E-003	mg/kg-day	respiratory system		E	10/01/98
Ammonia	Chronic	1.0E-001	mg/m3	2.9E-002	mg/kg-day	respiratory system		I	10/01/98
Anthracene	Chronic		mg/m3		mg/kg-day				
Antimony	Chronic		mg/m3		mg/kg-day				
Arochlor-1242	Chronic		mg/m3		mg/kg-day				
Arochlor-1248	Chronic		mg/m3		mg/kg-day				
Arochlor-1254	Chronic		mg/m3		mg/kg-day				
Arochlor-1260	Chronic		mg/m3		mg/kg-day				
Arsenic	Chronic		mg/m3		mg/kg-day	respiratory tract			
Barium	Chronic	4.9E-004	mg/m3	1.4E-004	mg/kg-day	fetotoxic		A	10/01/98
Benzene	Chronic	6.0E-003	mg/m3	1.7E-003	mg/kg-day	hematoxicity		E	10/01/98
Benzo(a)Anthracene	Chronic		mg/m3		mg/kg-day				
Benzo(a)Pyrene	Chronic		mg/m3		mg/kg-day				
Benzo(b)Fluoranthene	Chronic		mg/m3		mg/kg-day				
Benzo(k)Fluoranthene	Chronic		mg/m3		mg/kg-day				
Benzoic Acid	Chronic		mg/m3		mg/kg-day				
Benzyl Alcohol	Chronic		mg/m3		mg/kg-day				
Beryllium	Chronic	2.0E-005	mg/m3	5.7E-006	mg/kg-day	lung		I	10/01/98
Beta-BHC	Chronic		mg/m3		mg/kg-day				
bis(2-Chloroethyl)Ether	Chronic		mg/m3		mg/kg-day	liver			

TABLE 4-3

ADULT NON-CANCER TOXICITY DATA – INHALATION

ACS Site – Griffith, IA

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD/ Target Organ*	Dates (2) (MM/DD/YY)
bis(2-Ethylhexyl)Phthalate	Chronic		mg/m3		mg/kg-day				
Bromodichloromethane	Chronic		mg/m3		mg/kg-day	NA			
Butyl Benzyl Phthalate	Chronic		mg/m3		mg/kg-day				
Cadmium (food)	Chronic		mg/m3		mg/kg-day				
Cadmium (water)	Chronic		mg/m3		mg/kg-day	respiratory tract			
Carbazole	Chronic		mg/m3		mg/kg-day				
Carbon Disulfide	Chronic	7.0E-001	mg/m3	2.0E-001	mg/kg-day			I	10/01/98
Chlorobenzene	Chronic	1.8E-002	mg/m3	5.0E-003	mg/kg-day	liver		A	10/01/98
Chloroethane	Chronic	1.0E+001	mg/m3	2.9E+000	mg/kg-day	fetotoxic		I	10/01/98
Chloroform	Chronic	3.0E-004	mg/m3	8.6E-005	mg/kg-day	liver		E	10/01/98
Chloromethane	Chronic		mg/m3		mg/kg-day	kidney			
Chromium (III)	Chronic		mg/m3		mg/kg-day				
Chromium (VI)	Chronic		mg/m3		mg/kg-day	respiratory tract			
Chrysene	Chronic		mg/m3		mg/kg-day				
cis-1,2-Dichloroethene	Chronic		mg/m3		mg/kg-day				
Cobalt	Chronic		mg/m3		mg/kg-day				
Copper	Chronic		mg/m3		mg/kg-day				
Cyanide	Chronic		mg/m3		mg/kg-day				
Di-n-Butylphthalate	Chronic		mg/m3		mg/kg-day				
Di-n-Octyl Phthalate	Chronic		mg/m3		mg/kg-day				
Dibenzo(a,h)Anthracene	Chronic		mg/m3		mg/kg-day				
Dibenzofuran	Chronic		mg/m3		mg/kg-day				
Dieldrin	Chronic		mg/m3		mg/kg-day				
Diethylphthalate	Chronic		mg/m3		mg/kg-day				
Dimethylphthalate	Chronic		mg/m3		mg/kg-day				
Endosulfan	Chronic		mg/m3		mg/kg-day				
Endrin	Chronic		mg/m3		mg/kg-day				
Ethylbenzene	Chronic	1.0E+000	mg/m3	2.9E-001	mg/kg-day	respiratory tract		I	10/01/98
Fluoranthene	Chronic		mg/m3		mg/kg-day				
Fluorene	Chronic		mg/m3		mg/kg-day				
Gamma-BHC	Chronic		mg/m3		mg/kg-day				
Gamma-Chlordane	Chronic	7.0E-004	mg/m3	2.0E-004	mg/kg-day			I	10/01/98
Heptachlor	Chronic		mg/m3		mg/kg-day				
Heptachlor epoxide	Chronic		mg/m3		mg/kg-day			I	10/01/98
Hexachlorobenzene	Chronic		mg/m3		mg/kg-day	liver			
Hexachlorobutadiene	Chronic		mg/m3		mg/kg-day	kidney			
Indeno(1,2,3-cd)Pyrene	Chronic		mg/m3		mg/kg-day			H	10/01/98
Iron	Chronic		mg/m3		mg/kg-day			I	10/01/98
Isophorone	Chronic		mg/m3		mg/kg-day				
Lead	Chronic		mg/m3		mg/kg-day				
m,p-xylene	Chronic		mg/m3		mg/kg-day				
Manganese (nonfood)	Chronic	5.0E-005	mg/m3	1.4E-005	mg/kg-day	respiratory tract		I	10/01/98
Mercury	Chronic	3.0E-004	mg/m3	8.6E-005	mg/kg-day	CNS		I	10/01/98
Methoxychlor	Chronic		mg/m3		mg/kg-day	reproductive system			
Methylene Chloride	Chronic	3.0E+000	mg/m3	8.6E-001	mg/kg-day	respiratory tract		H	10/01/98
Naphthalene	Chronic	3.2E-003	mg/m3	9.0E-004	mg/kg-day	circulatory system		E	10/01/98
Nickel	Chronic		mg/m3		mg/kg-day	respiratory tract			
Nitrate/Nitrite	Chronic		mg/m3		mg/kg-day				
N-Nitrosodiphenylamine	Chronic		mg/m3		mg/kg-day				
ortho-xylene	Chronic		mg/m3		mg/kg-day				
Pentachlorophenol	Chronic		mg/m3		mg/kg-day				
Phenanthrene	Chronic		mg/m3		mg/kg-day				
Phenol	Chronic		mg/m3		mg/kg-day				
Pyrene	Chronic		mg/m3		mg/kg-day				
Selenium	Chronic		mg/m3		mg/kg-day				
Silver	Chronic		mg/m3		mg/kg-day				

TABLE 4-3

ADULT NON-CANCER TOXICITY DATA -- INHALATION

ACS Site -- Griffith, IA

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD/ Target Organ*	Dates (2) (MM/DD/YY)
Styrene	Chronic	1.0E+000	mg/m3	2.9E-001	mg/kg-day	CNS		I	10/01/98
Tetrachloroethene	Chronic	4.9E-001	mg/m3	1.4E-001	mg/kg-day	liver		E	10/01/98
Thallium	Chronic		mg/m3		mg/kg-day				
Toluene	Chronic	4.0E-001	mg/m3	1.1E-001	mg/kg-day	CNS		I	10/01/98
trans-1,2-Dichloroethene	Chronic		mg/m3		mg/kg-day				
Trichloroethene	Chronic		mg/m3		mg/kg-day	respiratory tract			
Vanadium	Chronic		mg/m3		mg/kg-day				
Vinyl Chloride	Chronic		mg/m3		mg/kg-day	CNS			
Xylene (mixed)	Chronic		mg/m3		mg/kg-day	CNS			
Zinc	Chronic		mg/m3		mg/kg-day				

NA = Not Applicable

(1) Adjusted Inhalation RfD = RfC * (20m3/day / 70 kg)

(2) Date of most recent search of IRIS or most recent EPA-ECAO provisional value.

* E = EPA - ECAO

H = Health Effects Assessment Summary Tables (HEAST)

A = HEAST Alternate

I = Integrated Risk Information System (IRIS)

TABLE 4-4

Adult/Child CANCER TOXICITY DATA – INHALATION

ACS Site – Griffith, IA

FILE: c:\projects\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
1,1,1-Trichloroethane		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	E	10/01/98
1,1,2,2-Tetrachloroethane	5.7E-005	$(ug/m3)^{-1}$	3,500	2.0E-001	$(mg/kg\text{-}day)^{-1}$	C	I	10/01/98
1,1,2-Trichloroethane	1.6E-005	$(ug/m3)^{-1}$	3,500	5.6E-002	$(mg/kg\text{-}day)^{-1}$	C	I	10/01/98
1,1-Dichloroethane		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	C	A	10/01/98
1,2,4-Trichlorobenzene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	H	10/01/98
1,2,4-Trimethylbenzene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		E	10/01/98
1,2-Dichlorobenzene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	E	10/01/98
1,2-Dichloroethane	2.6E-005	$(ug/m3)^{-1}$	3,500	9.1E-002	$(mg/kg\text{-}day)^{-1}$	B2	E	10/01/98
1,2-Dichloroethene(mixture)		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
1,2-Dichloropropane		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
1,3,5-Trimethylbenzene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		E	10/01/98
1,3-Dichlorobenzene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	E	10/01/98
1,4-Dichlorobenzene	6.3E-006	$(ug/m3)^{-1}$	3,500	2.2E-002	$(mg/kg\text{-}day)^{-1}$	C	I	10/01/98
2,2'-oxybis(1-Chloropropane)	1.0E-005	$(ug/m3)^{-1}$	3,500	3.5E-002	$(mg/kg\text{-}day)^{-1}$	C	H	10/01/98
2,4,5-Trichlorophenol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
2,4-Dichlorophenol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
2,4-Dimethylphenol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
2,4-Dinitrotoluene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
2,6-Dinitrotoluene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2	O	
2-Butanone (MEK)		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	I	10/01/98
2-Hexanone		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		E	10/01/98
2-Methylnaphthalene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
2-Methylphenol (O-Cresol)		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	C		
3,3-Dichlorobenzidine		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
4,4'-DDD		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
4,4'-DDE		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
4,4'-DDT	9.7E-005	$(ug/m3)^{-1}$	3,500	3.4E-001	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
4-Methyl-2-Pentanone		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		A	10/01/98
4-Methylphenol (P-Cresol)		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	C		
4-Nitrophenol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Acenaphthene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Acetone		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Aldrin	4.9E-003	$(ug/m3)^{-1}$	3,500	1.7E+001	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Alpha-BHC	1.8E-003	$(ug/m3)^{-1}$	3,500	6.3E+000	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Alpha-Chlordane	1.0E-004	$(ug/m3)^{-1}$	3,500	3.5E-001	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Aluminum		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		E	10/01/98
Ammonia		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		I	10/01/98
Anthracene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Antimony		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Arochlor-1242	5.7E-004	$(ug/m3)^{-1}$	3,500	2.0E+000	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Arochlor-1248	5.7E-004	$(ug/m3)^{-1}$	3,500	2.0E+000	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Arochlor-1254	5.7E-004	$(ug/m3)^{-1}$	3,500	2.0E+000	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Arochlor-1260	5.7E-004	$(ug/m3)^{-1}$	3,500	2.0E+000	$(mg/kg\text{-}day)^{-1}$	B2	I	10/01/98
Arsenic	4.3E-003	$(ug/m3)^{-1}$	3,500	1.5E+001	$(mg/kg\text{-}day)^{-1}$	A	I	10/01/98
Barium		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	A	10/01/98
Benzene	8.3E-006	$(ug/m3)^{-1}$	3,500	2.9E-002	$(mg/kg\text{-}day)^{-1}$	A	E	10/01/98
Benzo(a)Anthracene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
Benzo(a)Pyrene	8.9E-004	$(ug/m3)^{-1}$	3,500	3.1E+000	$(mg/kg\text{-}day)^{-1}$	B2	E	10/01/98
Benzo(b)Fluoranthene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
Benzo(k)Fluoranthene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
Benzoic Acid		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Benzyl Alcohol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			

TABLE 4-4
Adult/Child CANCER TOXICITY DATA -- INHALATION
ACS Site -- Griffith, IA

FILE: c:\project\acs\rsktbls\TARATOX.WK4

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
Beryllium	2.4E-003	(ug/m3) -1	3,500	8.4E+000	(mg/kg-day) -1	B2	I	10/01/98
Beta-BHC	5.1E-004	(ug/m3) -1	3,500	1.8E+000	(mg/kg-day) -1	B1	I	10/01/98
bis(2-Chloroethyl)Ether	3.1E-004	(ug/m3) -1	3,500	1.1E+000	(mg/kg-day) -1	B2	I	10/01/98
bis(2-Ethylhexyl)Phthalate	4.0E-006	(ug/m3) -1	3,500	1.4E-002	(mg/kg-day) -1	B2	E	10/01/98
Bromodichloromethane		(ug/m3) -1	3,500		(mg/kg-day) -1	B2	0	
Butyl Benzyl Phthalate		(ug/m3) -1	3,500		(mg/kg-day) -1	C		
Cadmium (food)	1.8E-003	(ug/m3) -1	3,500	6.3E+000	(mg/kg-day) -1	B1	I	10/01/98
Cadmium (water)	1.8E-003	(ug/m3) -1	3,500	6.3E+000	(mg/kg-day) -1	B1	I	10/01/98
Carbazole		(ug/m3) -1	3,500		(mg/kg-day) -1	B2		
Carbon Disulfide		(ug/m3) -1	3,500		(mg/kg-day) -1		I	10/01/98
Chlorobenzene		(ug/m3) -1	3,500		(mg/kg-day) -1	D	A	10/01/98
Chloroethane		(ug/m3) -1	3,500		(mg/kg-day) -1		I	10/01/98
Chloroform	2.3E-005	(ug/m3) -1	3,500	8.1E-002	(mg/kg-day) -1	B2	E	10/01/98
Chloromethane	1.8E-006	(ug/m3) -1	3,500	6.3E-003	(mg/kg-day) -1	C	H	10/01/98
Chromium (III)		(ug/m3) -1	3,500		(mg/kg-day) -1			
Chromium (VI)	1.2E-002	(ug/m3) -1	3,500	4.1E+001	(mg/kg-day) -1	A	H	10/01/98
Chrysene		(ug/m3) -1	3,500		(mg/kg-day) -1	B2		
cis-1,2-Dichloroethene		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Cobalt		(ug/m3) -1	3,500		(mg/kg-day) -1			
Copper		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Cyanide		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Di-n-Butylphthalate		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Di-n-Octyl Phthalate		(ug/m3) -1	3,500		(mg/kg-day) -1			
Dibenzo(a,h)Anthracene		(ug/m3) -1	3,500		(mg/kg-day) -1	B2		
Dibenzofuran		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Dieldrin	4.6E-003	(ug/m3) -1	3,500	1.6E+001	(mg/kg-day) -1	B2	I	10/01/98
Diethylphthalate		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Dimethylphthalate		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Endosulfan		(ug/m3) -1	3,500		(mg/kg-day) -1			
Endrin		(ug/m3) -1	3,500		(mg/kg-day) -1			
Ethylbenzene		(ug/m3) -1	3,500		(mg/kg-day) -1	D	I	10/01/98
Fluoranthene		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Fluorene		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Gamma-BHC		(ug/m3) -1	3,500		(mg/kg-day) -1	B2-C		
Gamma-Chlordane	1.0E-004	(ug/m3) -1	3,500	3.5E-001	(mg/kg-day) -1	B2	I	10/01/98
Heptachlor	1.3E-003	(ug/m3) -1	3,500	4.5E+000	(mg/kg-day) -1	B2	I	10/01/98
Heptachlor epoxide	2.6E-003	(ug/m3) -1	3,500	9.1E+000	(mg/kg-day) -1	B2	I	10/01/98
Hexachlorobenzene	4.6E-004	(ug/m3) -1	3,500	1.6E+000	(mg/kg-day) -1	B2	I	10/01/98
Hexachlorobutadiene	2.2E-005	(ug/m3) -1	3,500	7.8E-002	(mg/kg-day) -1	C	I	10/01/98
Indeno(1,2,3-cd)Pyrene		(ug/m3) -1	3,500		(mg/kg-day) -1	B2		
Iron		(ug/m3) -1	3,500		(mg/kg-day) -1			
Isophorone		(ug/m3) -1	3,500		(mg/kg-day) -1	C		
Lead		(ug/m3) -1	3,500		(mg/kg-day) -1	B2		
m,p-xylene		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Manganese (nonfood)		(ug/m3) -1	3,500		(mg/kg-day) -1	D	I	10/01/98
Mercury		(ug/m3) -1	3,500		(mg/kg-day) -1	D	I	10/01/98
Methoxychlor		(ug/m3) -1	3,500		(mg/kg-day) -1	D		
Methylene Chloride	4.7E-007	(ug/m3) -1	3,500	1.7E-003	(mg/kg-day) -1	B2	H	10/01/98
Naphthalene		(ug/m3) -1	3,500		(mg/kg-day) -1	D	I	10/01/98
Nickel		(ug/m3) -1	3,500		(mg/kg-day) -1	A		
Nitrate/Nitrite		(ug/m3) -1	3,500		(mg/kg-day) -1			
N-Nitrosodiphenylamine		(ug/m3) -1	3,500		(mg/kg-day) -1	B2		

TABLE 4-4

Adult/Child CANCER TOXICITY DATA -- INHALATION

ACS Site -- Griffith, IA

FILE: c:\project\acs\rsktble\TARATOX.WK4

Chemical of Potential Concern	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (2) (MM/DD/YY)
ortho-xylene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Pentachlorophenol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	B2		
Phenanthrene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Phenol		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Pyrene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Selenium		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Silver		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Styrene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$		I	10/01/98
Tetrachloroethene	5.7E-007	$(ug/m3)^{-1}$	3,500	2.0E-003	$(mg/kg\text{-}day)^{-1}$	C-B2	E	10/01/98
Thallium		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Toluene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D	I	10/01/98
trans-1,2-Dichloroethene		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Trichloroethene	1.7E-006	$(ug/m3)^{-1}$	3,500	6.0E-003	$(mg/kg\text{-}day)^{-1}$	C-B2	E	10/01/98
Vanadium		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$			
Vinyl Chloride	8.6E-005	$(ug/m3)^{-1}$	3,500	3.0E-001	$(mg/kg\text{-}day)^{-1}$	A	H	10/01/98
Xylene (mixed)		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		
Zinc		$(ug/m3)^{-1}$	3,500		$(mg/kg\text{-}day)^{-1}$	D		

NA = Not Applicable

* E = EPA - ECAO

H = Health Effects Assessment Summary Tables (HEAST)

I = Integrated Risk Information System (IRIS)

(1) Adjustment Factor applied to Unit Risk to calculate Inhalation Slope Factor = 70kg x 1/20m3/day x 1000ug/mg

(2) Date of most recent search of IRIS or most recent EPA-ECAO provisional value

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

FILE: s:\project\acs\rskdata\TARATOX2.WK4

Table 4-5
Child Non-cancer Toxicity Data -- Oral/Dermal
ACS Site -- Griffith, IA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ or System	Combined Uncertainty/ Modifying Factors	Sources of RfD/ Target Organ*	Dates of RfD: (3) Target Organ (MM/DD/YY)
Cadmium (food)	Chronic	1.0E-003	mg/kg-day	2.5	2.5E-005	mg/kg-day	kidney		I	10/01/98
Cadmium (water)	Chronic	5.0E-004	mg/kg-day	5	2.5E-005	mg/kg-day	kidney		I	10/01/98
Carbazole	Chronic		mg/kg-day			mg/kg-day				
Carbon Disulfide	Chronic	1.0E-001	mg/kg-day		1.0E-001	mg/kg-day	adrenal		I	10/01/98
Chlorobenzene	Chronic	2.0E-002	mg/kg-day	31	6.2E-003	mg/kg-day	liver		I	10/01/98
Chloroethane	Chronic	4.0E-001	mg/kg-day		4.0E-001	mg/kg-day	liver		E	10/01/98
Chloroform	Chronic	1.0E-002	mg/kg-day	95.5	9.6E-003	mg/kg-day	circulatory system		I	10/01/98
Chloromethane	Chronic		mg/kg-day			mg/kg-day	kidney		H	10/01/98
Chromium (III)	Subchronic	1.0E+000	mg/kg-day	0.4	4.0E-003	mg/kg-day	liver		I	10/01/98
Chromium (VI)	Subchronic	2.0E-002	mg/kg-day	10	2.0E-003	mg/kg-day			I	10/01/98
Chrysene	Chronic		mg/kg-day	41		mg/kg-day	liver		E	10/01/98
cis-1,2-Dichloroethene	Subchronic	1.0E-001	mg/kg-day	100	1.0E-001	mg/kg-day	circulatory system		H	10/01/98
Cobalt	Chronic	6.0E-002	mg/kg-day		6.0E-002	mg/kg-day	heart		E	10/01/98
Copper	Chronic	4.0E-002	mg/kg-day	60	2.4E-002	mg/kg-day	liver		H	10/01/98
Cyanide	Subchronic	2.0E-002	mg/kg-day	50	1.0E-002	mg/kg-day	liver		I	10/01/98
Di-n-Butylphthalate	Subchronic	1.0E+000	mg/kg-day	97	9.7E-001	mg/kg-day	liver		I	10/01/98
Di-n-Octyl Phthalate	Subchronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	NA		H	10/01/98
Dibenzo(a,h)Anthracene	Chronic		mg/kg-day	90		mg/kg-day			E	10/01/98
Dibenzofuran	Chronic	4.0E-003	mg/kg-day		4.0E-003	mg/kg-day	dec growth rate		E	10/01/98
Dieldrin	Subchronic	5.0E-005	mg/kg-day	100	5.0E-005	mg/kg-day	liver		I	10/01/98
Diethylphthalate	Subchronic	8.0E+000	mg/kg-day		8.0E+000	mg/kg-day	low body wt		I	10/01/98
Dimethylphthalate	Chronic	1.0E+001	mg/kg-day		1.0E+001	mg/kg-day	GI tract		W	10/01/98
Endosulfan	Chronic	6.0E-003	mg/kg-day		6.0E-003	mg/kg-day	kidney		I	10/01/98
Endrin	Subchronic	3.0E-004	mg/kg-day		3.0E-004	mg/kg-day	liver		I	10/01/98
Ethylbenzene	Subchronic	1.0E-001	mg/kg-day	92	9.2E-002	mg/kg-day	liver		I	10/01/98
Fluoranthene	Subchronic	4.0E-001	mg/kg-day		4.0E-001	mg/kg-day	kidney		I	10/01/98
Fluorene	Subchronic	4.0E-001	mg/kg-day		4.0E-001	mg/kg-day	skeletal system		I	10/01/98
Gamma-BHC	Subchronic	3.0E-003	mg/kg-day	100	3.0E-003	mg/kg-day	liver		I	10/01/98
Gamma-Chlordane	Chronic	5.0E-004	mg/kg-day		5.0E-004	mg/kg-day	liver		I	10/01/98
Heptachlor	Subchronic	5.0E-004	mg/kg-day		5.0E-004	mg/kg-day	liver		I	10/01/98
Heptachlor epoxide	Subchronic	1.3E-005	mg/kg-day		1.3E-005	mg/kg-day	liver		I	10/01/98
Hexachlorobenzene	Chronic	8.0E-004	mg/kg-day	80	6.4E-004	mg/kg-day	liver		I	10/01/98
Hexachlorobutadiene	Subchronic	7.0E-004	mg/kg-day		7.0E-004	mg/kg-day	low body wt		H	10/01/98
Indeno(1,2,3-cd)Pyrene	Chronic		mg/kg-day			mg/kg-day	NA		E	10/01/98
Iron	Chronic	3.0E-001	mg/kg-day		3.0E-001	mg/kg-day			E	10/01/98
Isophorone	Subchronic	2.0E+000	mg/kg-day		2.0E+000	mg/kg-day	kidney		I	10/01/98
Lead	Chronic		mg/kg-day	15		mg/kg-day	CNS			
m,p-xylene	Subchronic	4.0E-001	mg/kg-day	90	3.6E-001	mg/kg-day	fetotoxic		H	10/01/98
Manganese (nonfood)	Chronic	2.0E-002	mg/kg-day		2.0E-002	mg/kg-day	kidney		I	10/01/98
Mercury	Chronic		mg/kg-day			mg/kg-day	low body wt			
Methoxychlor	Subchronic	5.0E-003	mg/kg-day		5.0E-003	mg/kg-day	reproductive system		I	10/01/98
Methylene Chloride	Subchronic	6.0E-002	mg/kg-day	55	3.3E-002	mg/kg-day	liver		I	10/01/98
Naphthalene	Subchronic	4.0E-002	mg/kg-day		4.0E-002	mg/kg-day	circulatory system		I	10/01/98
Nickel	Subchronic	2.0E-002	mg/kg-day	5	1.0E-003	mg/kg-day	low body wt		I	10/01/98
Nitrate/Nitrite	Chronic	1.0E-001	mg/kg-day	3	3.0E-003	mg/kg-day	fetotoxic		I	10/01/98
N-Nitrosodiphenylamine	Chronic		mg/kg-day			mg/kg-day	liver		I	10/01/98
ortho-xylene	Subchronic	4.0E-001	mg/kg-day	90	3.6E-001	mg/kg-day	fetotoxic		H	10/01/98
Pentachlorophenol	Subchronic	3.0E-002	mg/kg-day		3.0E-002	mg/kg-day	liver		I	10/01/98
Phenanthrene	Chronic		mg/kg-day			mg/kg-day	NA			
Phenol	Subchronic	6.0E-001	mg/kg-day		6.0E-001	mg/kg-day	liver		I	10/01/98
Pyrene	Subchronic	3.0E-001	mg/kg-day		3.0E-001	mg/kg-day	liver		I	10/01/98
Selenium	Subchronic	5.0E-003	mg/kg-day		5.0E-003	mg/kg-day	liver		I	10/01/98
Silver	Subchronic	5.0E-003	mg/kg-day	21	1.1E-003	mg/kg-day	skin		I	10/01/98
Styrene	Chronic	2.0E-001	mg/kg-day		2.0E-001	mg/kg-day	low body wt		I	10/01/98
Tetrachloroethene	Subchronic	1.0E-001	mg/kg-day	100	1.0E-001	mg/kg-day	liver		I	10/01/98

Table 4-5
Child Non-cancer Toxicity Data -- Oral/Dermal
ACS Site -- Griffith, IA

FILE: c:\project\acs\[illegible]\TARATOX2.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (%) (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ or System	Combined Uncertainty/ Modifying Factors	Sources of RfD/ Target Organ*	Dates of RfD: (3) Target Organ (MM/DD/YY)
Thallium	Chronic	7.0E-005	mg/kg-day		7.0E-005	mg/kg-day	NA		O	10/01/98
Toluene	Subchronic	2.0E+000	mg/kg-day	100	2.0E+000	mg/kg-day	liver		I	10/01/98
trans-1,2-Dichloroethene	Subchronic	2.0E-001	mg/kg-day	100	2.0E-001	mg/kg-day	kidney		I	10/01/98
Trichloroethene	Chronic	6.0E-003	mg/kg-day	98	5.9E-003	mg/kg-day	liver		E	10/01/98
Vanadium	Subchronic	7.0E-003	mg/kg-day		7.0E-003	mg/kg-day	circulatory system		H	10/01/98
Vinyl Chloride	Chronic		mg/kg-day	100		mg/kg-day	liver		H	10/01/98
Xylene (mixed)	Subchronic	4.0E-001	mg/kg-day	89.5	3.6E-001	mg/kg-day	fetotoxic		I	10/01/98
Zinc	Subchronic	3.0E-001	mg/kg-day	30	9.0E-002	mg/kg-day	thyroid		I	10/01/98

NA = Not Applicable

(1) Refer to RAGS, Part A

(2) Adjusted Dermal RfD = Oral RfD * (Adjustment Factor), default value of 100% was used when Adjustment Factor was not available.

(3) Date of most recent search of IRIS or most recent EPA-ECAO provisional value.

* E = EPA - ECAO

H = Health Effects Assessment Summary Tables (HEAST)

I = Integrated Risk Information System (IRIS)

O = Other

FILE: c:\project\acs\exhibit\TARATOX2.WK4

Table 4-6
Child Non-Cancer Toxicity Data - Inhalation
ACS NPL Site -- Griffith, Indiana

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD/ Target Organ*	Dates (2) (MM/DD/YY)
1,1,1-Trichloroethane	Chronic	2.1E-001	mg/m3	2.9E-001	mg/kg-day	liver		E	10/01/98
1,1,2,2-Tetrachloroethane	Chronic		mg/m3		mg/kg-day	liver			
1,1,2-Trichloroethane	Chronic		mg/m3		mg/kg-day	liver			
1,1-Dichloroethane	Subchronic	5.0E+000	mg/m3	6.7E+000	mg/kg-day	kidney		A	10/01/98
1,2,4-Trichlorobenzene	Subchronic	2.0E+000	mg/m3	2.7E+000	mg/kg-day	uroporphyria		H	10/01/98
1,2,4-Trimethylbenzene	Chronic	1.3E-003	mg/m3	1.7E-003	mg/kg-day	respiratory system		E	
1,2-Dichlorobenzene	Subchronic	2.0E+000	mg/m3	2.7E+000	mg/kg-day	low body weight		E	10/01/98
1,2-Dichloroethane	Chronic	1.1E-003	mg/m3	1.4E-003	mg/kg-day	circulatory system		E	10/01/98
1,2-Dichloroethene(mixture	Chronic		mg/m3		mg/kg-day				
1,2-Dichloropropane	Subchronic	1.3E-002	mg/m3	1.7E-002	mg/kg-day			I	10/01/98
1,3,5-Trimethylbenzene	Chronic	1.3E-003	mg/m3	1.7E-003	mg/kg-day	respiratory system		E	
1,3-Dichlorobenzene	Chronic	1.5E-003	mg/m3	2.0E-003	mg/kg-day	respiratory system		E	10/01/98
1,4-Dichlorobenzene	Subchronic	2.5E+000	mg/m3	3.3E+000	mg/kg-day	liver		I	10/01/98
2,2'-oxybis(1-Chloropropan	Chronic		mg/m3		mg/kg-day	liver			
2,4,5-Trichlorophenol	Chronic		mg/m3		mg/kg-day				
2,4-Dichlorophenol	Chronic		mg/m3		mg/kg-day				
2,4-Dimethylphenol	Chronic		mg/m3		mg/kg-day			I	10/01/98
2,4-Dinitrotoluene	Chronic		mg/m3		mg/kg-day				
2,6-Dinitrotoluene	Chronic		mg/m3		mg/kg-day	NA			
2-Butanone (MEK)	Subchronic	1.0E+000	mg/m3	1.3E+000	mg/kg-day	CNS		I	10/01/98
2-Hexanone	Chronic	1.1E-003	mg/m3	1.4E-003	mg/kg-day	CNS		E	10/01/98
2-Methylnaphthalene	Subchronic		mg/m3		mg/kg-day				
2-Methylphenol (O-Cresol)	Chronic		mg/m3		mg/kg-day				
3,3'-Dichlorobenzidine	Chronic		mg/m3		mg/kg-day				
4,4'-DDD	Chronic		mg/m3		mg/kg-day				
4,4'-DDE	Chronic		mg/m3		mg/kg-day				
4,4'-DDT	Chronic		mg/m3		mg/kg-day	liver			
4-Methyl-2-Pentanone	Subchronic	8.0E-001	mg/m3	1.1E+000	mg/kg-day	CNS		A	
4-Methylphenol (P-Cresol)	Chronic		mg/m3		mg/kg-day				
4-Nitrophenol	Chronic		mg/m3		mg/kg-day				
Acenaphthene	Chronic		mg/m3		mg/kg-day				
Acetone	Chronic		mg/m3		mg/kg-day				
Aldrin	Chronic		mg/m3		mg/kg-day				
Alpha-BHC	Chronic		mg/m3		mg/kg-day				
Alpha-Chlordane	Chronic	1.5E-004	mg/m3	2.0E-004	mg/kg-day	liver			
Aluminum	Chronic	7.5E-004	mg/m3	1.0E-003	mg/kg-day	respiratory system		E	10/01/98
Ammonia	Chronic	2.1E-002	mg/m3	2.9E-002	mg/kg-day	respiratory system		I	10/01/98
Anthracene	Chronic		mg/m3		mg/kg-day				
Antimony	Chronic		mg/m3		mg/kg-day				
Arochlor-1242	Chronic		mg/m3		mg/kg-day				
Arochlor-1248	Chronic		mg/m3		mg/kg-day				
Arochlor-1254	Chronic		mg/m3		mg/kg-day				
Arochlor-1260	Chronic		mg/m3		mg/kg-day				
Arsenic	Chronic		mg/m3		mg/kg-day	respiratory tract			
Barium	Chronic	1.1E-004	mg/m3	1.4E-004	mg/kg-day	fetotoxic		A	10/01/98
Benzene	Subchronic	6.0E-002	mg/m3	8.0E-002	mg/kg-day	leukemia		E	10/01/98
Benzo(a)Anthracene	Chronic		mg/m3		mg/kg-day				
Benzo(a)Pyrene	Chronic		mg/m3		mg/kg-day				
Benzo(b)Fluoranthene	Chronic		mg/m3		mg/kg-day				
Benzo(k)Fluoranthene	Chronic		mg/m3		mg/kg-day				
Benzoic Acid	Chronic		mg/m3		mg/kg-day				
Benzyl Alcohol	Chronic		mg/m3		mg/kg-day				
Beryllium	Chronic	4.3E-006	mg/m3	5.7E-006	mg/kg-day	lung		I	10/01/98
Beta-BHC	Chronic		mg/m3		mg/kg-day				
bis(2-Chloroethyl)Ether	Chronic		mg/m3		mg/kg-day	liver			
bis(2-Ethylhexyl)Phthalate	Subchronic	2.0E-001	mg/m3	2.7E-001	mg/kg-day				
Bromodichloromethane	Chronic		mg/m3		mg/kg-day	NA			
Butyl Benzyl Phthalate	Subchronic		mg/m3		mg/kg-day				
Cadmium (food)	Chronic		mg/m3		mg/kg-day				
Cadmium (water)	Chronic		mg/m3		mg/kg-day	respiratory tract			
Carbazole			mg/m3		mg/kg-day				
Carbon Disulfide	Subchronic	7.0E-001	mg/m3	9.3E-001	mg/kg-day			I	10/01/98
Chlorobenzene	Chronic	2.0E-001	mg/m3	2.7E-001	mg/kg-day	liver		A	10/01/98
Chloroethane	Chronic	1.0E+001	mg/m3	1.3E+001	mg/kg-day	fetotoxic		I	10/01/98
Chloroform	Subchronic	4.0E-002	mg/m3	5.3E-002	mg/kg-day	liver		E	10/01/98

Table 4-6
Child Non-Cancer Toxicity Data - Inhalation
ACS NPL Site -- Griffith, Indiana

FILE: c:\[illegible]\TARATOX2.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD/ Target Organ*	Dates (2) (MM/DD/YY)
Chloromethane	Subchronic	9.0E+000	mg/m3	1.2E+001	mg/kg-day	kidney			
Chromium (III)	Chronic		mg/m3		mg/kg-day				
Chromium (VI)	Chronic		mg/m3		mg/kg-day	respiratory tract			
Chrysene	Chronic		mg/m3		mg/kg-day				
cis-1,2-Dichloroethene	Chronic		mg/m3		mg/kg-day				
Cobalt	Chronic		mg/m3		mg/kg-day				
Copper	Chronic		mg/m3		mg/kg-day				
Cyanide	Chronic		mg/m3		mg/kg-day				
Di-n-Butylphthalate	Chronic		mg/m3		mg/kg-day				
Di-n-Octyl Phthalate	Chronic		mg/m3		mg/kg-day				
Dibenzo(a,h)Anthracene	Chronic		mg/m3		mg/kg-day				
Dibenzofuran	Chronic		mg/m3		mg/kg-day				
Dieldrin	Chronic		mg/m3		mg/kg-day				
Diethylphthalate	Chronic		mg/m3		mg/kg-day				
Dimethylphthalate	Chronic		mg/m3		mg/kg-day				
Endosulfan	Chronic		mg/m3		mg/kg-day				
Endrin	Chronic		mg/m3		mg/kg-day				
Ethylbenzene	Subchronic	1.0E+000	mg/m3	1.3E+000	mg/kg-day	respiratory tract		I	10/01/98
Fluoranthene	Chronic		mg/m3		mg/kg-day				
Fluorene	Chronic		mg/m3		mg/kg-day				
Gamma-BHC	Chronic		mg/m3		mg/kg-day				
Gamma-Chlordane	Chronic	1.5E-004	mg/m3	2.0E-004	mg/kg-day			I	10/01/98
Heptachlor	Chronic		mg/m3		mg/kg-day				
Heptachlor epoxide	Chronic		mg/m3		mg/kg-day			I	10/01/98
Hexachlorobenzene	Chronic		mg/m3		mg/kg-day	liver			
Hexachlorobutadiene	Chronic		mg/m3		mg/kg-day	kidney			
Indeno(1,2,3-cd)Pyrene	Chronic		mg/m3		mg/kg-day			H	10/01/98
Iron	Chronic		mg/m3		mg/kg-day			I	10/01/98
Isophorone	Chronic		mg/m3		mg/kg-day				
Lead	Chronic		mg/m3		mg/kg-day				
m,p-xylene	Chronic		mg/m3		mg/kg-day				
Manganese (nonfood)	Chronic	1.1E-005	mg/m3	1.4E-005	mg/kg-day	respiratory tract		I	10/01/98
Mercury	Subchronic	3.0E-004	mg/m3	4.0E-004	mg/kg-day	CNS		I	10/01/98
Methoxychlor	Chronic		mg/m3		mg/kg-day	reproductive system			
Methylene Chloride	Subchronic	3.0E+000	mg/m3	4.0E+000	mg/kg-day	respiratory tract		H	10/01/98
Naphthalene	Chronic	6.8E-004	mg/m3	9.0E-004	mg/kg-day	circulatory system		E	10/01/98
Nickel	Chronic		mg/m3		mg/kg-day	respiratory tract			
Nitrate/Nitrite	Chronic		mg/m3		mg/kg-day				
N-Nitrosodiphenylamine	Chronic		mg/m3		mg/kg-day				
ortho-xylene	Chronic		mg/m3		mg/kg-day				
Pentachlorophenol	Chronic		mg/m3		mg/kg-day				
Phenanthrene	Chronic		mg/m3		mg/kg-day				
Phenol	Chronic		mg/m3		mg/kg-day				
Pyrene	Chronic		mg/m3		mg/kg-day				
Selenium	Chronic		mg/m3		mg/kg-day				
Silver	Chronic		mg/m3		mg/kg-day				
Styrene	Subchronic	3.0E+000	mg/m3	4.0E+000	mg/kg-day	leukemia		I	10/01/98
Tetrachloroethene	Chronic	1.1E-001	mg/m3	1.4E-001	mg/kg-day	liver		E	10/01/98
Thallium	Chronic		mg/m3		mg/kg-day				

Table 4-6
Child Non-Cancer Toxicity Data - Inhalation
ACS NPL Site -- Griffith, Indiana

FILE: c:\projects\acs\exhibit\TARATOX2.WK4

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD/ Target Organ*	Dates (2) (MM/DD/YY)
Toluene	Subchronic	1.0E+000	mg/m3	1.3E+000	mg/kg-day	CNS		I	10/01/98
trans-1,2-Dichloroethene	Chronic		mg/m3		mg/kg-day				
Trichloroethene	Chronic		mg/m3		mg/kg-day	respiratory tract			
Vanadium	Chronic		mg/m3		mg/kg-day				
Vinyl Chloride	Chronic		mg/m3		mg/kg-day	CNS			
Xylene (mixed)	Chronic		mg/m3		mg/kg-day	CNS			
Zinc	Chronic		mg/m3		mg/kg-day				

NA = Not Applicable

(1) Adjusted subchronic inhalation RfD = RfC * (20m3/day /15 kg)

(2) Date of most recent search of IRIS or most recent EPA-ECAO provisional value.

* E = EPA - ECAO
H = Health Effects Assessment Summary Tables (HEAST)
A = HEAST Alternate
I = Integrated Risk Information System (IRIS)